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Chemical Week

December 26, 1959

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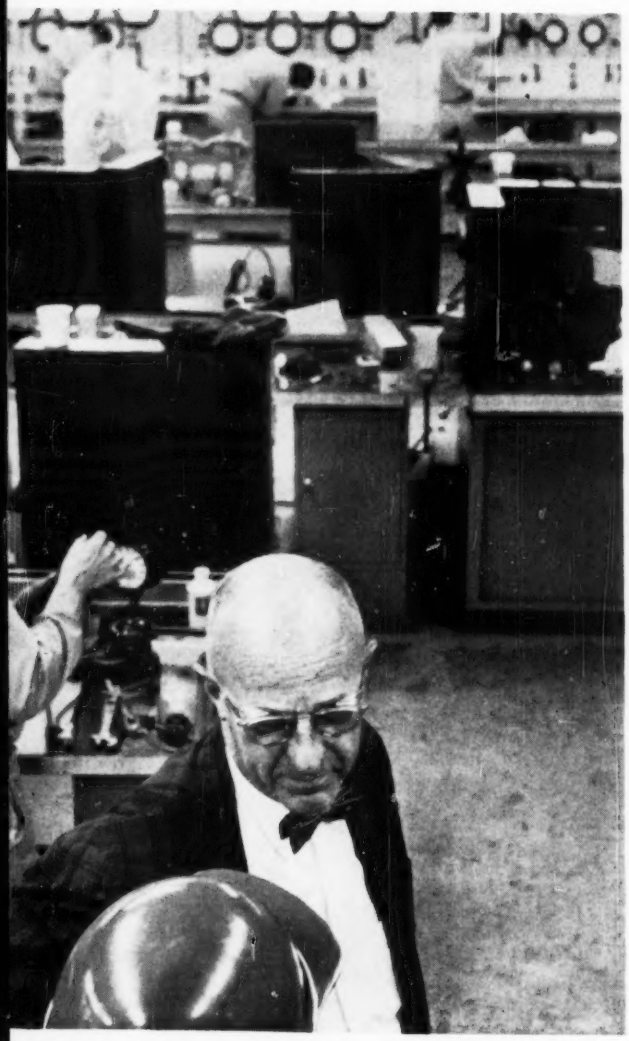

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Steelmaking breakthrough in the works? Strategic-Udy plant readies for debut. p. 34

His team ups instrumentation efficiency. . p. 38

New boost for New Orleans. Water link to Gulf will spur CPI development . . . . p. 41

Leased autos—why fleets are gaining favor with sales management. . . . . p. 53

Forecast '60

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Citric Acid -- Dowell's New Service for Cleaning Stainless Steel Process Equipment

Now, for the first time, plant operators can be sure of a new degree of safety in the cleaning of their pressure units containing austenitic stainless steel—for example, heat exchangers, stainless-clad pressure vessels, atomic reactors, and supercritical-pressure steam generators. Citric Acid service by Dowell provides a new, effective method for these special chemical cleaning situations.

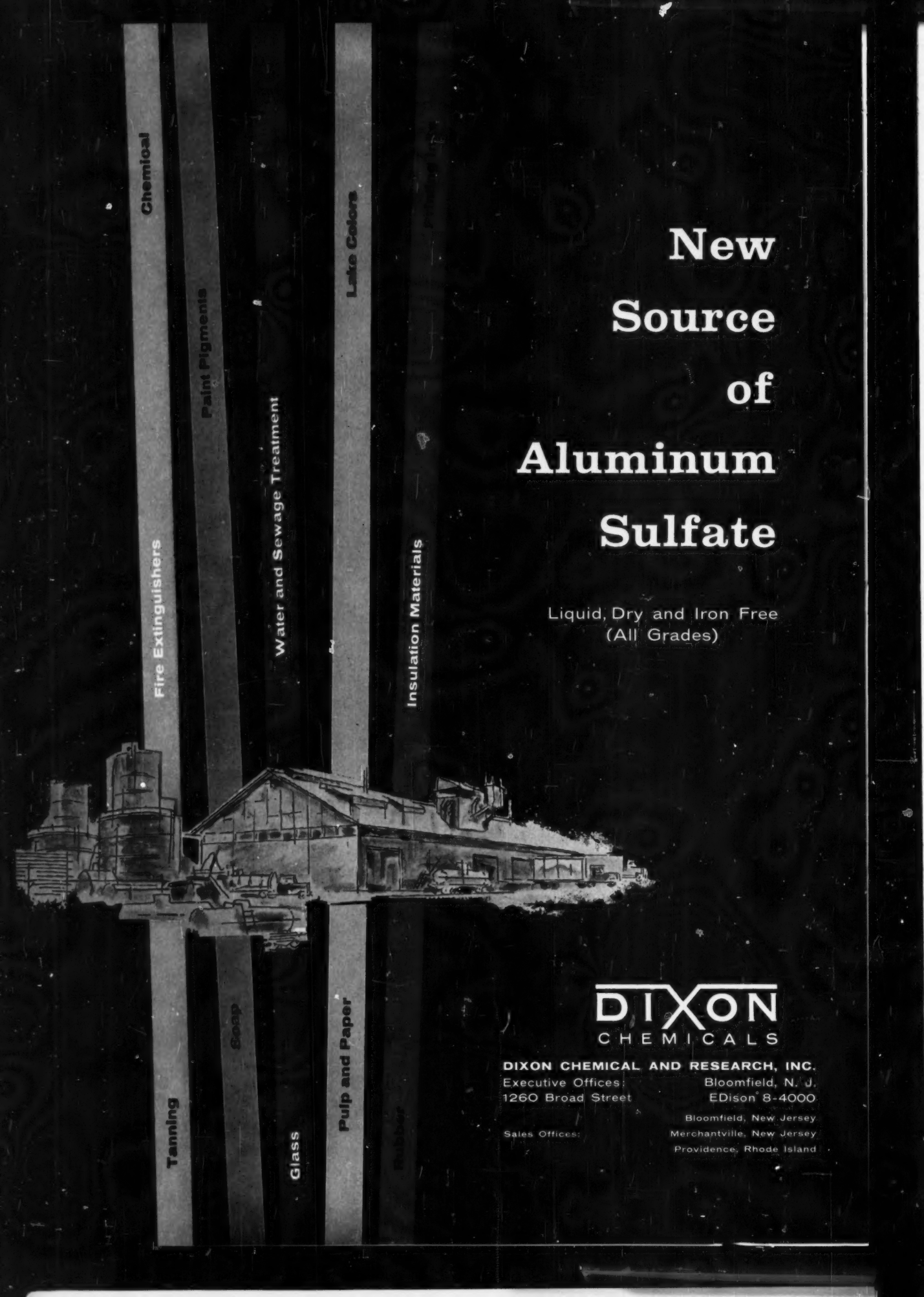
The Citric Acid used in Dowell chemical cleaning is inhibited with an *exclusive chloride-free* inhibitor. Cleaning with this new field-proven solution assures a chloride-free solvent system, and thus helps prevent chloride stress-corrosion cracking.

Dowell Citric Acid also provides other significant advantages: Citric Acid stabilizes dissolved iron and helps prevent precipitation of insoluble iron compounds when neutralizing chemicals are used. Flushing of the unit is not as difficult when Citric Acid is used. Citric Acid is especially suitable where stainless steel and other metals are used together in construction of the unit.

Citric Acid cleaning with a chloride-free inhibitor is just one of the new ideas from Dowell research. Other recent contributions include the new "white glove" standards of cleanness, copper removal agents and the new jetting device for cleaning heat exchanger tube bundles.

Ask your Dowell representative about Citric Acid service and Dowell chemical cleaning programs for your plant equipment. Dowell, the leader in chemical cleaning service and research, operates in every major industrial area through 165 offices and stations. Dowell, Tulsa 1, Oklahoma.

Chemical cleaning service for all industry DOWELL
DIVISION OF THE DOW CHEMICAL COMPANY



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Chemical Week

TOP OF THE WEEK

DECEMBER 26, 1959

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23 New long-range forecasts on production, availability of key commodities stem from Resources for the Future's studies.

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ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

50,000,000 LBS./YR. INDUSTRIAL ALCOHOLS PLANT SLATED FOR CONTINENTAL OIL COMPANY

ALFOL facility to be constructed at Lake Charles, Louisiana, will be completed early in 1961

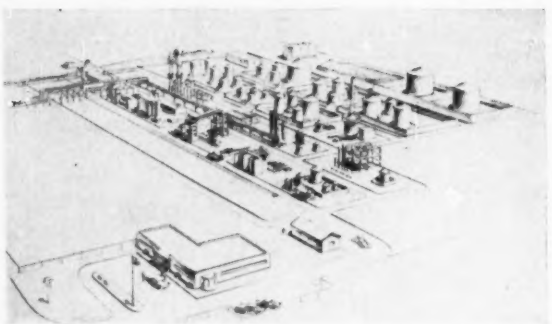
Continental Oil Company has announced that The Lummus Company has been awarded the contract to engineer and construct an Industrial Alcohols Plant at Lake Charles, Louisiana, with a capacity of more than 50,000,000 lbs./yr.

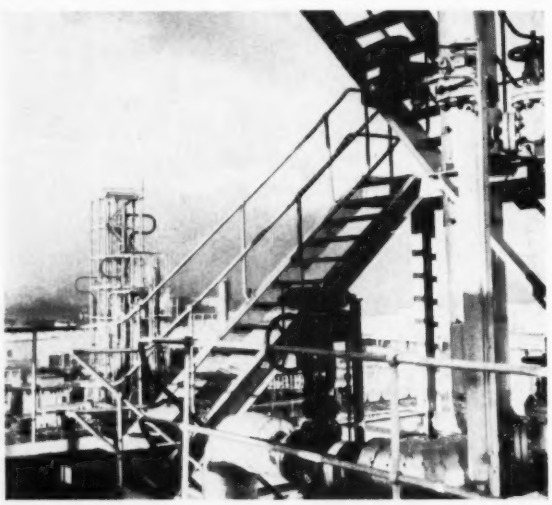
These higher alcohols will be manufactured by a new technique originally conceived by Dr. Karl Ziegler. Organo-metallic catalysts are used to promote chain growth of ethylene followed by oxidation and hydrolysis to primary straight-chain alcohols containing an even number of carbon atoms.

With completion of the plant these fatty alcohols will be available for the first time from petroleum rather than the natural sources such as tallow fat and coconut oil from which they are now produced. These primary alcohols to be marketed under the Conoco trade name of "ALFOL", will be used in the manufacture of detergents, plastics, cosmetics, lubricating oil additives, paper, textiles and emulsifiers.

The primary raw material, ethylene, for these new products will be obtained from the ethylene plant operated at Lake Charles by Petroleum Chemicals, Inc. of which Conoco owns a 50% interest. This plant was also engineered and constructed by Lummus.

In the past 50 years, Lummus has built over 800 plants to produce petrochemicals, chemicals and petroleum products. If your company is planning facilities of this kind, discuss your plans with Lummus.





ETHYLENE OXIDE PLANT FOR SHELL IN ENGLAND

This plant at Carrington, near Manchester, was planned and built for Shell Chemical Company Limited by The Lummus Company Limited.

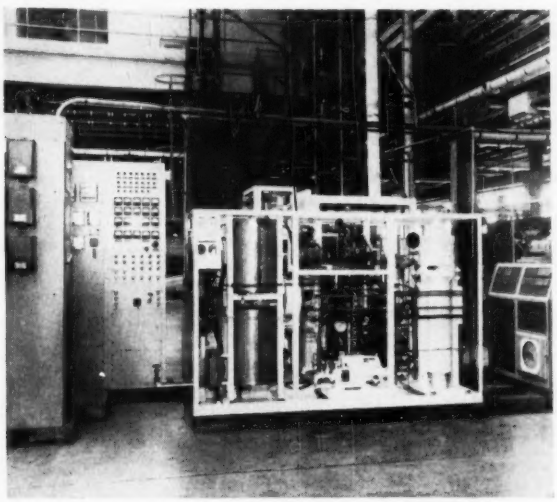
The basic process planning was carried out by Lummus engineers with Shell Development Company in the U.S.A. The plant was designed in detail in consultation with N.V. Bataafsche Petroleum Maatschappij, The Hague. It was procured and erected by the Lummus organization in London.

The Carrington plant is the third unit of its type recently completed by Lummus, the others being for Wyandotte Chemical Company and for Calcasieu Chemical Company, in the U.S.A.

The Shell Development Ethylene Oxide process embodies direct oxidation by oxygen for producing ethylene oxide from ethylene.

Test loop for nuclear reactor fabricated at Lummus' Engineering Development Center

The Lummus Company Engineering Development Center, Newark, N. J., recently completed the fabrication, assembly, test operation, and dismantling of a ¾" In-pile Test Loop designed and constructed for Westinghouse Electric Corporation, Atomic Power Department Contract AT-(30-3)-222. This loop was built for experiments in connection with irradiation of fuel element and control rod designs for the nuclear power reactor to be installed by the Yankee Atomic Electric Company at Rowe, Massachusetts. The reactor is being designed by Westinghouse for Yankee. Upon delivery to the Materials Testing Reactor at Idaho Falls, the loop will be installed and operated to simulate actual reactor conditions on fuel element and control rod samples.



General view of components. Extreme right is data logger recording thirty-two points of flow temperature and pressure. Asbestos covered line in rear is the In-Pile line. The farthest section is that which will be inserted in reactor. Unit in center contains make-up pump, vacuum pumps and neutron detector. All units are in respective positions as they will be placed on the balcony of reactor.

Several Studies in View

The purpose of this experiment is to study the performance of the fuel element design and its resistance to corrosion under irradiation in plant environment. It is also intended to investigate the suitability of the control rod materials. In addition to this, during the first months of operation, a water chemistry stability study is planned.

Limitations of Space Overcome

Owing to the limited space available at the Materials Testing Reactor, the entire loop was constructed in two cubicles, an instrument panel, and a motor control center. All the components other than controls were contained in these two cubicles. Careful planning was required to insure that all equipment would fit and that there would be no piping interferences. After assembly, the loop was operated at The Lummus Company Engineering Development Center to insure meeting of engineering specifications and reliability of components. After this operation and acceptance by the customer, the cubicles, motor control centers, and instruments were individually packed and shipped to Idaho Falls for reassembly by Phillips Petroleum Company personnel, who operate the Materials Testing Reactor.

Over a half-century of Process-Industry experience

Here is just a partial list of chemicals for which Lummus has designed, engineered or constructed plants:

Acetone	Dichlorethane	Nitric acid
Acrolein	Dichlorobenzene	Phenol
Allethrin	Di-isobutyl alcohol	Phthalic anhydride
Ammonia	Ethylbenzene	Polyvinyl alcohol
Ammonium nitrate	Ethyl chloride	Polyvinyl pyrrolidone
Ammonium sulfate	Ethylene	Propargyl alcohol
Benzol	Ethylene glycol	Propylene
Beryllium metal	Ethylene oxide	Pyrrolidone
Bisphenol	Epon® resin	Styrene
Butadiene	Formaldehyde	Sulfuric acid
Butanediol	Heavy water	Surfactants
Butynediol	Hydrogen	Tetramer
Butyrolactone	Hydrogen sulfide	Trichlorethylene
Carbon black	Isopropyl alcohol	Trichlorobenzene
Caustic soda	Lamp black	Toluene
Chlorobenzene	Magnesium sulfate	Uranium oxide
Cumene	Mercuric nitrate	Vinyl acetate
Di-ammonium phosphate	Naphthalene	Vinyl pyrrolidone

Discuss your next chemical or petrochemical project with a Lummus representative.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, N. Y.; Houston, Washington, D. C.; Montreal, London, Paris, The Hague, Madrid. **Engineering Development Center:** Newark, N. J.

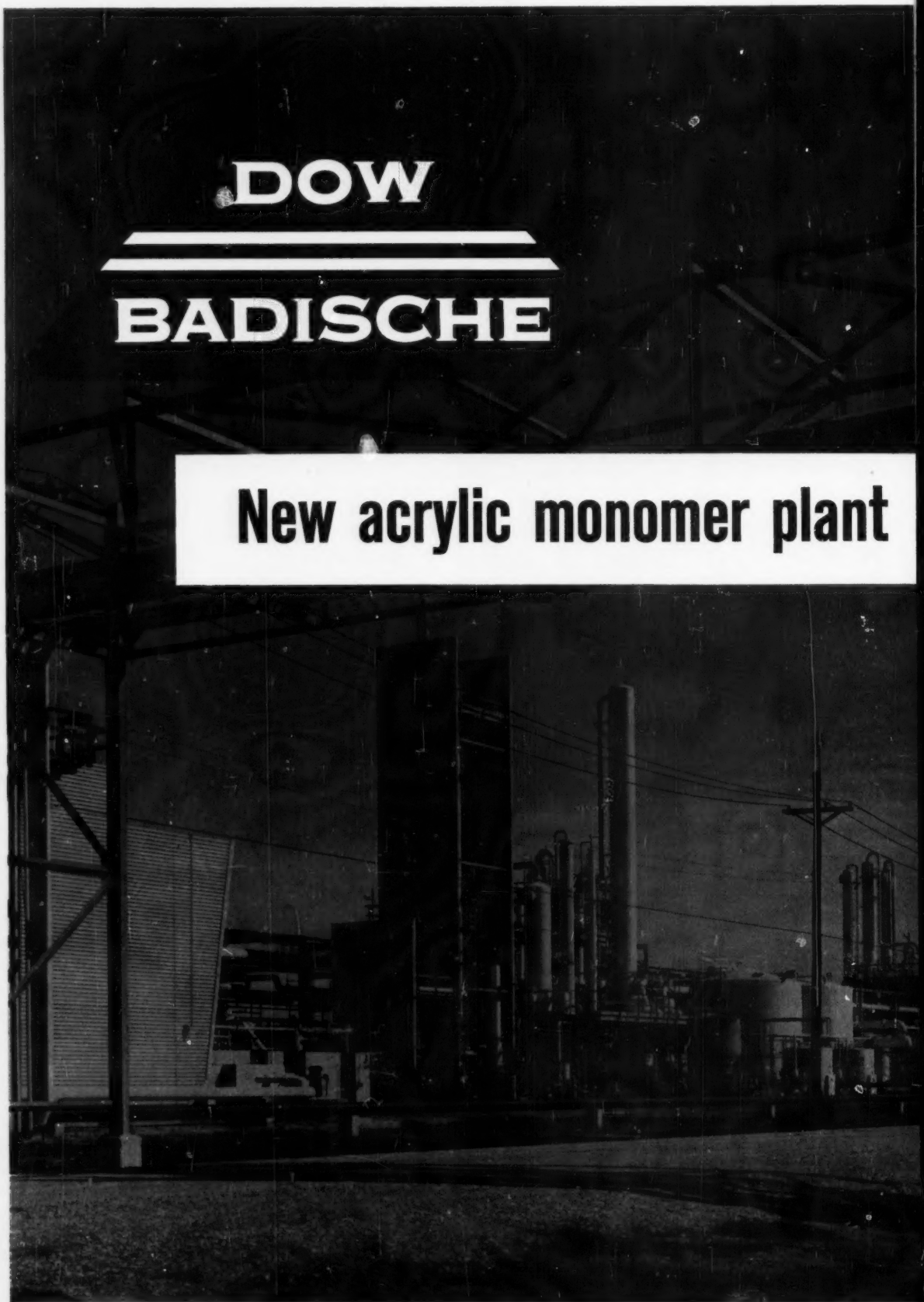
$21 Million Refinery Expansion for Petroleos Mexicanos goes to Lummus for Design, Engineering, Construction

Petroleos Mexicanos has announced that a contract was awarded to The Lummus Company for approximately $21,000,000 for expansion of Pemex's Salamanca refinery, and for a 220 tons per day anhydrous ammonia plant also at Salamanca.

Lummus will design, engineer, handle procurement in the United States and abroad, and supervise the construction of these installations.

The anhydrous ammonia plant is part of Pemex's program for production of petrochemicals and the refinery expansion is part of Pemex's current enlargement of facilities to keep up with Mexico's growing demands for gasoline, distillates, vehicular and industrial fuels.

The refinery expansion consists of an atmospheric and vacuum distillation unit, catalytic cracking, gas recovery, catalytic polymerization and treating units, revamp of some existing process facilities, as well as various offsite additions.


DOW
BADISCHE
New acrylic monomer plant

●*Samples of five acrylic monomers available now!*

starts production January '60

At Freeport, Texas, a modern plant for the production of acrylic monomers is nearing completion . . . and, in January, will go on stream. It's the culmination of a plan to combine American and German skills in the production and distribution of these useful chemicals. The plant will be operated by Dow Badische Chemical Company, a new organization owned jointly by The Dow Chemical Company and BASF, Overzee, N.V., a subsidiary of Badische Anilin- & Soda-Fabrik AG., Ludwigshafen a. Rhein.

Construction of this new facility was preceded by an evaluation of both short- and long-term market factors in terms of present and future uses of acrylic products. Strong indications of a rising trend in acrylic use—followed by a high-level, sustained future demand through expanded uses—resulted in the decision to take advantage of this opportunity and enter the market as soon as possible. Consequently, these two leaders in the worldwide basic chemical industry joined forces to provide the raw materials, processing and distribution facilities, and the all-important technical skills needed for the production of high quality acrylic monomers.

In January, the new plant will begin production of the five acrylic monomers listed below. Later, the activities of Dow Badische are expected to broaden into other chemical areas.

Samples of the five new acrylic monomers for research and evaluation, as well as literature describing their properties, are now available for the asking. We invite you to write to THE DOW CHEMICAL COMPANY, Midland, Mich., Plastics Sales Dept. 2368AM12-26.

Dow Badische combines American and German technical skills to produce:

ACRYLIC ACID—TECHNICAL • ETHYL ACRYLATE • METHYL ACRYLATE • BUTYL ACRYLATE • 2-ETHYLHEXYL ACRYLATE

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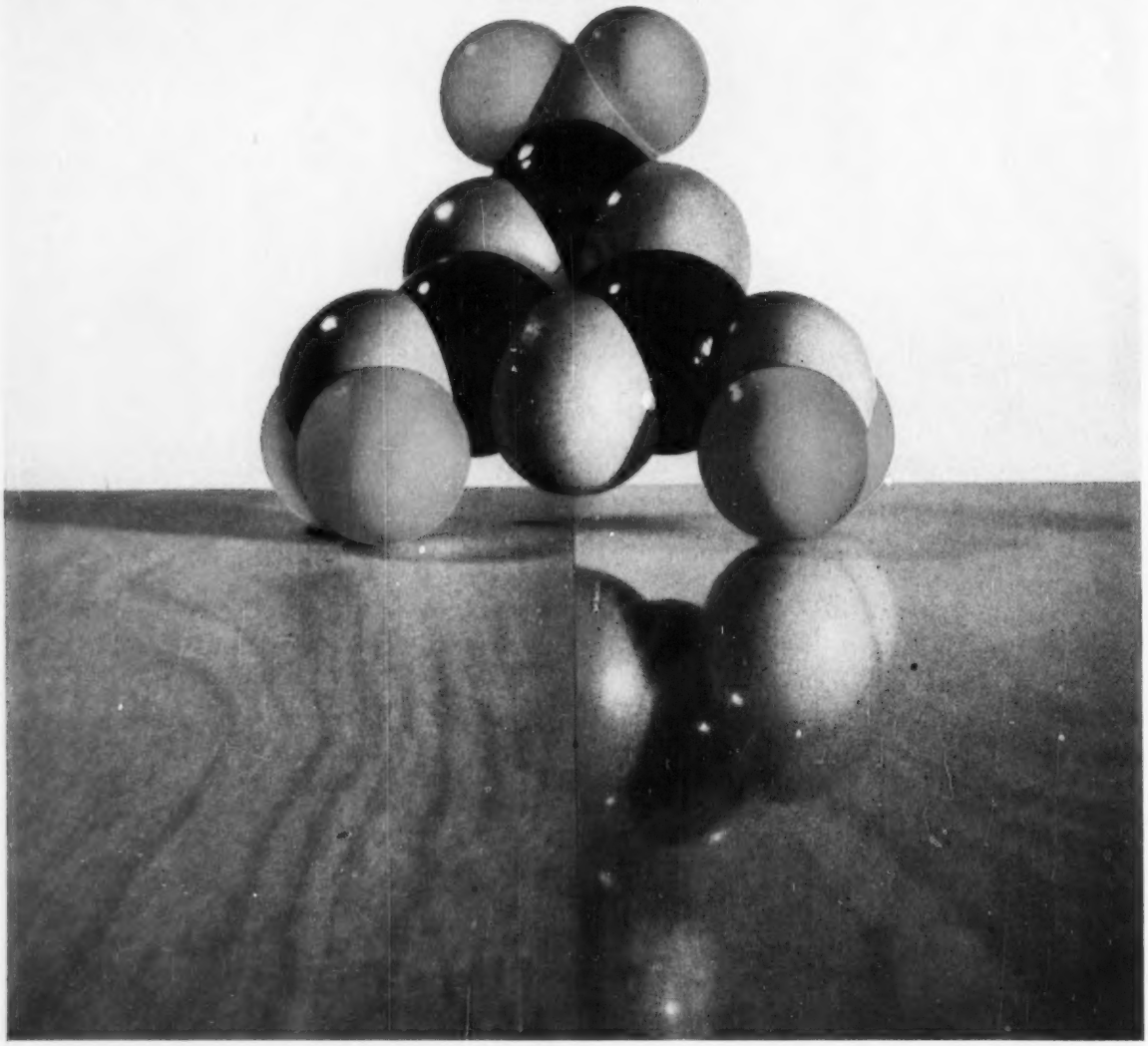
How General Electric Chemical Research



changed the surface... CREATED NEW TEXTURED PLASTIC LAMINATE

It is the usual business of chemists to transform one molecule into another. But sometimes the task—equally difficult – is to *prevent* a chemical change while achieving a transformation of certain physical properties.

Decorative plastic laminates are a case in point. A big problem with these laminates – used for furniture, walls, doors – is the glassy surface, which shows finger and water marks, and gives a cold, hard look and feel to patterns and simulated wood grains. Brushing to a "satin" finish does little to improve this condition.

General Electric chemists found a way to eliminate the problem... without changing the basic chemistry of the melamine molecule that gives these plastic laminates their unusually tough, wear-resistant properties.

The new laminates have a softly textured surface. Designers and decorators acclaim the fact that the new textured TEXTOLITE® is glare-free and pleasing to the touch. It doesn't show superficial marks or scratches. Wood grains have the warmth and feel of natural wood.

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OPINION

Carbide's Tech Service

TO THE EDITOR: In your Nov. 21 issue (*p. 188*), you seem to be saying that Union Carbide Chemicals has gone into the furniture polish business. Say not so!

Some of our customers have interpreted it to mean that we have recently put a furniture polish on the market. Union Carbide Chemicals Co. has no intention of entering this market. . . . Some new formulations, developed in the laboratories of Union Carbide Corp.'s Silicones Division, were offered for the consideration of furniture polish manufacturers. . . .

The Silicones Division does devote a substantial portion of its technical service work to the development of new silicone-containing products. But these products are not intended to be sold by the Silicones Division. Rather, they are offered to customers solely as a service of the division. . . .

JOHN R. HULTEN
Manager
Fluorocarbons Division
Union Carbide Chemicals Co.
New York

Author's Query

TO THE EDITOR: I would like to receive biographical data on Joseph Priestley, the theologian-chemist. I am preparing an up-to-date and complete biography, and any information your readers can supply will be greatly appreciated.

PHIL T. PAFFORD
925 Dempster
Evanston, Ill.

MEETINGS

American Assn. for Advancement of Science, annual meeting, Chicago, Dec. 26-31.

Society of Plastics Engineers, 16th annual technical conference, Conrad Hilton Hotel, Chicago, Jan. 12-15, 1960.

Engineers Joint Council, annual meeting, New York, Jan. 22.

American Rocket Society, solid propellents conference, Princeton University, Princeton, N.J., Jan. 28-29.

Instrument Society of America, instrument and automation conference and exhibit, Sam Houston Coliseum, Houston, Tex., Feb. 1-5.

BEHIND THE NEWS

CAN ONE SAY MORE OF SID KIRKPATRICK, with his retirement after 38 years of invaluable service to McGraw-Hill only three days away? So much has been said in the last few weeks —during the presentation of the Kirkpatrick chemical management and engineering achievement awards; in the long-planned salute in the Dec. 28 issue of *Chemical Engineering;* in official and unofficial goodbyes from those in industry, education and at McGraw-Hill.

So many tributes have been paid that anything we could say would be repetitious, and almost redundant. Instead, then, may we look ahead to Sid's future—in a personal salute made more appropriate in that it appears in our yearly forecast issue.

Retirement is a little scary when viewed close up, with its prospect of a drastic reordering of one's entire life. But, as a former General Motors executive vice-president put it two years after retiring:

"I'm having the time of my life. The problems of retirement are real enough, as I discovered; but my own experience has left me with a strong desire to say something affirmative about the opportunities that become available in retirement, about the new freedoms whose existence I had scarcely suspected."

It's this type of forecast that we're sure will come true for Sid. He is already planning a schedule of active retirement—an affirmative program—that would give many younger people pause.

Look at his schedule, for example, as it involves the chemical engineering profession.

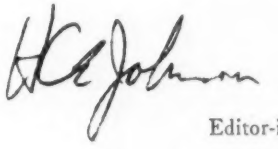
He'll be active co-editor of the new edition of Perry's "Chemical Engineers' Handbook" in the McGraw-Hill Book Co. chemical engineering series, of which Sid will continue as consulting editor.

Tracing the worldwide spread of chemical engineering knowledge—in the books and magazines he's been responsible for, and elsewhere—is another subject he'll take up. Sid has been invited to prepare a paper discussing this subject for the Mexico City meeting of the American Institute of Chemical Engineers in June.

He'll also be away from his Short Hills, N. J., home in May, when he's slated to dedicate the new chemical engineering building at Ohio State University in Columbus.

We could speak of Sid's many other activities—as corporate director, as an educational, technical or financial consultant; there are other areas we can't speak of—as a consultant on classified government matters and as an unofficial employment counselor to chemical management men.

We of CHEMICAL WEEK are happy that Sid's retirement from McGraw-Hill will not mean the end of his influence in the industry and its professions. Rather, it will furnish still more opportunities for him to do what he has always done—to add his voice and his pen to the job of building an ever greater field and appreciation for it. We salute you, Sid, as counselor, engineer, editor and friend.



Editor-in-Chief

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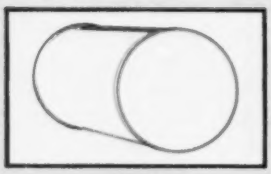

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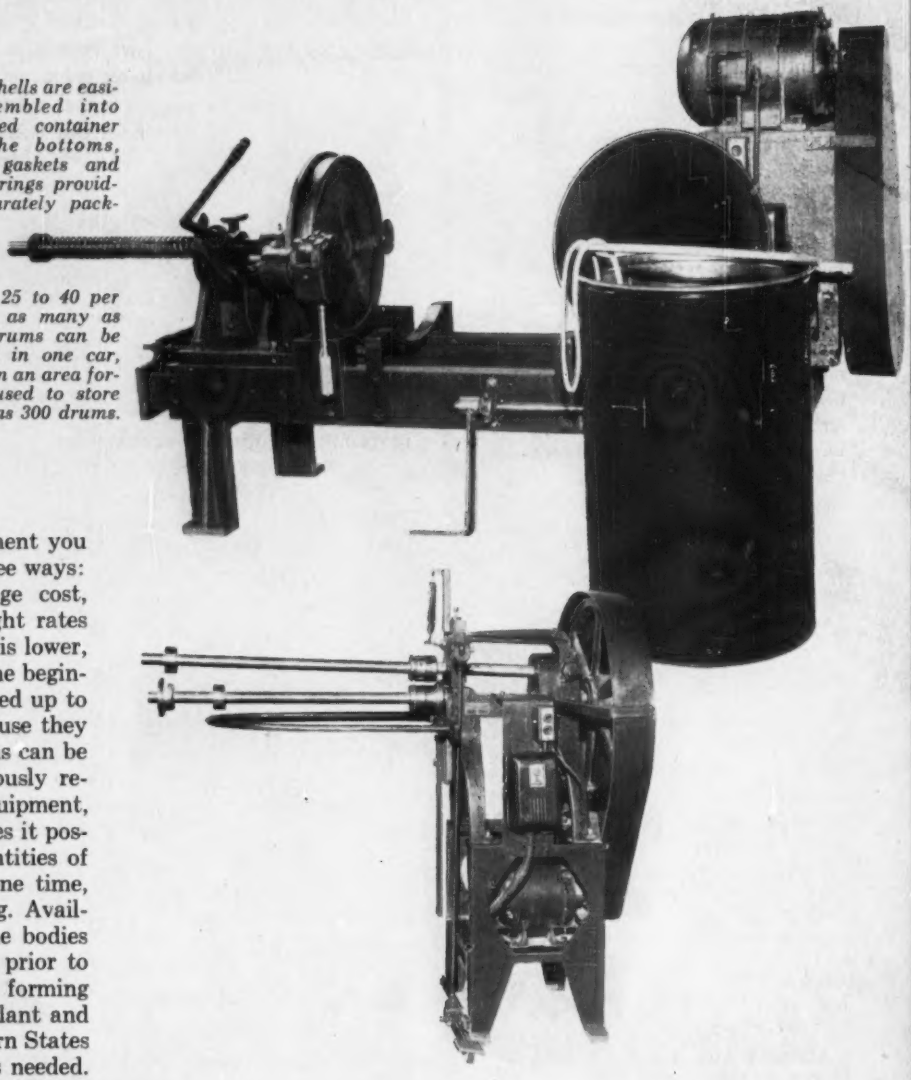

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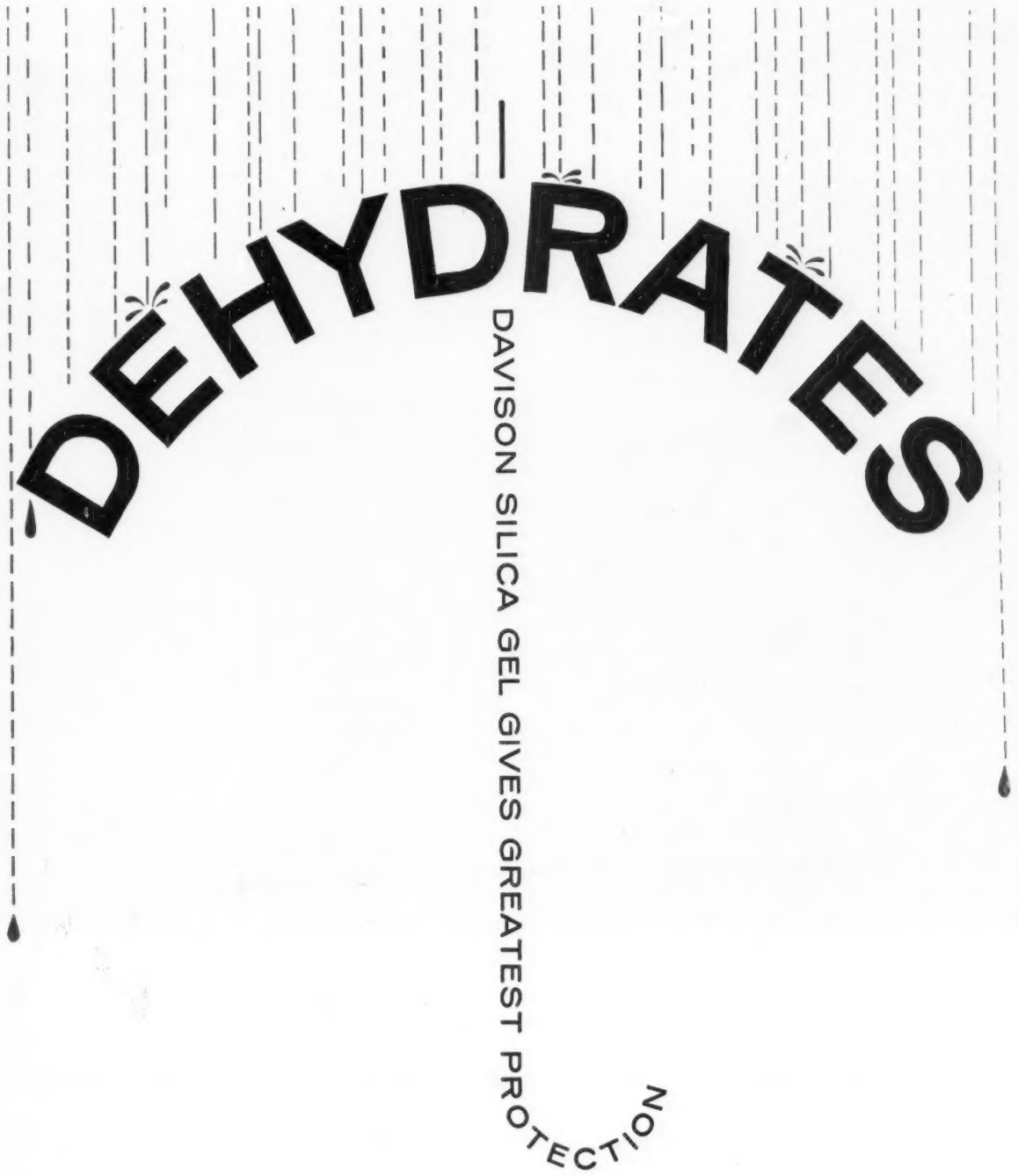

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FREEPORT SULPHUR COMPANY

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Business
Newsletter

CHEMICAL WEEK
December 26, 1959

Besides the big changes predicted for the year ahead *(see pp. 63-70)*, there are some "constants" on the CPI scene. Among the landmarks that will likely remain the same from now until next Christmas-time:

• The hot dispute over General Aniline & Film's cloudy ownership and vested stock. Right now, lawyers are poring over Swiss banking documents, trying to prepare for a trial that may not start before '61.

Latest incident: Interhandel—the Swiss holding company that is suing to recover the GAF stock seized by the U.S. government in '41—has blocked GAF's proposal to acquire an unidentified paper company. The company makes photographic paper types that GAF no longer will be able to buy from Eastman Kodak. The hitch: owners of the company would swap their stock only if the redemption clause on GAF Class A shares were cancelled. GAF and the Justice Dept. were entirely willing, but Interhandel got the court to forbid the move.

• Concern—and occasionally panic—about possible health hazards of chemicals used in growing and processing food products. Earlier this month, Food & Drug Commissioner George Larrick told the Manufacturing Chemists' Assn. that "enforcement of the pure food and related laws must keep pace with rule-making," added that "it may be several years before we can get funds and manpower to do an effective job."

Whether more painstaking policing of farm and food chemicals will arouse or allay the public's anxieties is moot. Nevertheless, the National Agricultural Chemicals Assn. has just predicted that '60 sales of agricultural chemicals will rise by another 5%, to $291 million, despite recent adverse publicity on aminotriazole and stilbestrol.

• Industry's problems of taxation and financing in an era of "creeping inflation." The issue will likely be pigeonholed until after the '60 elections, despite growing clamor about this country's economic growth rate vs. that of the U.S.S.R. The House Ways & Means Committee has been hearing fresh testimony on how expansion and modernization programs are affected by the present tax law's limitation on depreciation rates. Just last week, the committee indicated that it intends to delve a little deeper into the question of taxing certain now-exempt research organizations. But, it says, it won't be drafting any legislation on the subject. A key question raised last week: Can a research group restrict findings for the exclusive use of sponsors and still maintain its tax-exempt status?

• Public and governmental suspicions about industrial pricing practices. Keeping the issue at a boil is Senator Kefauver, who will be taking another crack at the pharmaceutical industry about the end of January. But local incidents heighten the public's interest. Latest example: at Binghamton, N.Y., last week, Mayor John Burns called on state and federal officers to investigate the chlorine industry because his city received

identical bids—"right down to the last decimal point"—on liquid chlorine for its water and sewage treatment. "I'm not talking about the actual bidders, who are either agents or distributors," the mayor declared. "I'm talking about the manufacturers who supply them."

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Numerous expansion projects are being authorized and started as the old year expires.

Three new projects will boost capacity for coal-tar chemicals. U.S. Steel Corp. is constructing a modern coal-tar distillation unit at its works near Pittsburgh, with completion targeted for 61. Also, U.S. Steel's Tennessee Coal and Iron division is increasing capacity more than 100% at its coke and chemical works at Fairfield, Ala. (*CW, Dec. 19, p. 26*). And Bethlehem Steel is upping coke and by-product capacity 20% at Buffalo, N.Y. (*p. 25*). Naphthalene demand is rising now, spurred by synthetic resin production boosts. And higher-than-ever demands for high-quality coal derivatives are anticipated in the '60s.

And the Southwest is getting two new sources of mineral acids.

At La Porte, Tex., Du Pont is building a sulfuric acid plant—described as one of the company's largest. The new unit is mainly to supply Du Pont's new caprolactam operation at Beaumont, but will also serve as an additional source of supply for Gulf Coast industries.

At Pine Bluff, Ark., hydrochloric acid is being added to the product list of Arkansas Louisiana Chemical Corp. in the caustic-chlorine facility leased from the government. Capacity: about 6,000 tons/year.

Maleic anhydride facilities are being built on both the East and West Coasts, despite some predictions that this industry may be heading into overcapacity (*CW Market Newsletter, Aug. 8*). Heyden Newport Chemical has given the go-ahead on its 24-million-lbs./year plant at Fords, N.J. This project is to be completed by the end of '60. And Standard Oil of Calif. has started construction of a 20-million-lbs./year maleic unit at its Richmond, Calif., refinery, due for completion next summer.

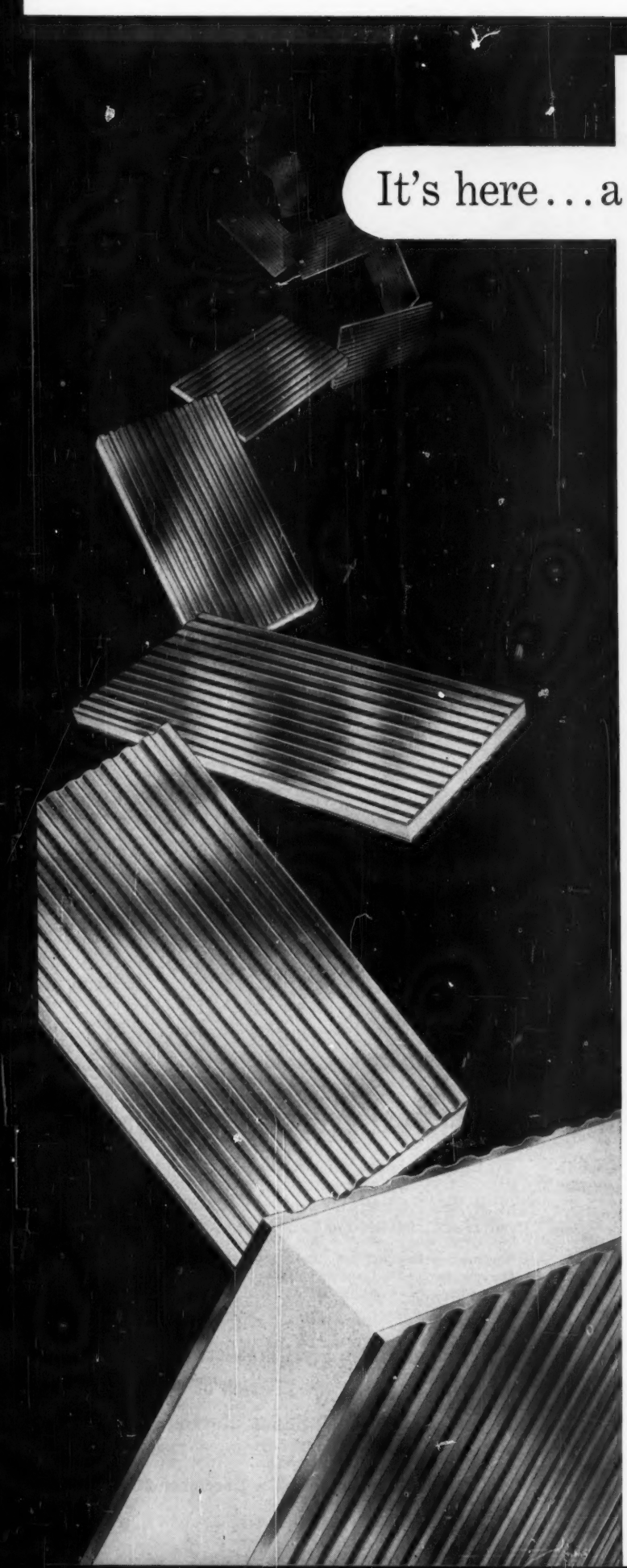
Biggest single factor in the growing demand for maleic anhydride: polyester resins, annual production of which has climbed more than 50% recently.

Three other chemical expansions of the week:

• Reynolds Metals Co. will build a 5,000-tons/year silicon plant at its aluminum reduction plant near Listerhill, Ala.

• Michigan Chemical Corp. (St. Louis, Mich.) and Murphy Corp. (El Dorado, Ark.) will double capacity of their jointly owned bromine plant near El Dorado. Completion target: early summer of '60.

• Hooker Chemical has approved plans for a potassium phosphate plant at Jeffersonville, Ind., to be in operation by mid-'60. Main product: tetra-potassium phyrophosphate—a major liquid detergent chemical. Capacity was not disclosed.



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Get specifications and other technical data on NIAX Triol LK-380 and other NIAX polyols from a Technical Representative in any CARBIDE office. Or write Dept. HW, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

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USS TRADEMARK

Chemical Week — December 26, 1959

Dow's Phillips: On the team, old political hand.

Dow's Beutel: On the way, new political problems.

Selling 'Industry's Side' in the Southwest

Down on the Texas-Louisiana Gulf Coast this week, CPI executives are mounting a political offensive that could set the pace for similar action throughout the country.

They're aggressively "selling industry's side" to their employees and the public, hiring men with political know-how to represent industry at the state capitals, and sometimes seeking a direct hand in political affairs by running for office themselves.

Familiar Story: Few states parallel the eccentricities of Texas and Louisiana politics, but the basic forces that have spurred the latter's industry people into action are the ones that have been causing concern to business leaders elsewhere: populations are swelling, and so are the needs and demands for more government services — schools, roads, hospitals, welfare. State and local governments are scraping the bottom of their budget barrels and are looking around for new revenue sources. Often as not, their gaze alights on industry. And in Texas and Louisiana, the biggest industry is the chemical industry.

In the two Gulf states, sky-rocketing outlays alone would pose a weighty revenue problem; in the past 13 years, state expenditures have shot up 600% in Texas, 800% in Louisiana. But the problem is intensified by the ills of the oil industry. The petroleum glut has forced Texas wells to be held down to only nine operating days a month, and that means a bite into severance tax revenue — which last year yielded more than 25% of the state's total tax take.

And Louisiana has been counting on income from new mineral rights leases to help pay a good part of a teachers' pay rise. But the present state of the oil industry makes it likely that leases will be minimal next year.

Louisiana, in fact, is already running at a $68-million/year deficit—floated this year by a $78-million surplus still in the treasury. That will soon run out.

Tax Troubles: Already, chemical operations in Texas and Louisiana have felt the weight of heavier taxes. Example: Dow's Texas Division—the largest CPI complex on the Gulf Coast—will lay out $5.4 million in taxes this year--an increase of 1,450% over the tab 15 years ago. The division's production has increased only 650% in the same period.

Despite the revenue pinch in Texas, a major campaign is now under way to have the governor call a special session of the legislature early in '60 to finance a teachers' pay rise that will cost the state about $30 million/-year, and cost local districts $5 million/year in addition. That means new revenue pressures not only from

Carbide's Wilker: For fair shake, a strong try at political education.

the state itself but also from its 1,700 school districts. And more cries for revenue will come from the host of other local authorities that have taxation powers in Texas — cities, counties, water, navigation, and drainage districts — more than 3,300 in all.

Prime Target: On the whole, CPI management men don't feel they are overtaxed—yet. But they do believe that some taxes tend to single them out. Severance taxes — the states' prime revenue sources — are a good example. These are passed on to CPI users of oil, gas and sulfur indirectly.

Producers also consider property taxes—basic revenue source of local authorities—discriminatory. In Louisiana, for example, it was estimated a few years ago that industrial property was taxed at an average of 10-30% of value (unless it was under the 10-year industrial property tax exemption), while more than 80% of Louisiana homeowners paid no state, parish or school property taxes. Homeowners, industry men point out, can vote; but industries cannot.

Taxes may be the main spur to CPI political action, but plant men are speaking up as well on other legislation in areas such as water and water-rights, stream and air pollution, unemployment and workmen's compensation insurance.

One CPI executive prominent in the area told CHEMICAL WEEK: "There always seems to be somebody who, for no logical reason, is attempting to 'strengthen' these laws, which can seriously affect the cost of doing business."

Stiff Front: In their new drive for political expression, industry men are finding they are up against some stiff opposition. In both states, veteran political observers point to the possible fusion of school teachers and labor unions into a united front that would be the states' most politically powerful coalition.

Both groups are already potent forces, and their positions are often in opposition to industry's. For example, industry is generally in favor of broad-based, "nondiscriminatory" taxes, such as a retail sales tax. Labor doesn't agree. "Our union prefers personal income and corporate profits taxes to a retail sales tax," Texas AFL-CIO President Jerry Holleman told CHEMICAL WEEK. "We propose a corporate profit tax with a graduated scale from 3-5½%, patterned on federal taxes."

A businessman arguing against a tax that would benefit teachers also runs into a touchy situation. One CPI executive told CHEMICAL WEEK: "When a tax bill whose revenues would be dedicated to teachers' pay raises comes up that obviously discriminates against industry—and sometimes specifically the chemical industry — we are accused of being anti-education if we so much as mention that we are going to be taxed out of further expansions in that state unless the tax is spread out more evenly."

Speaking Out: Many CPI men believe that the industry can thank itself for a large part of the plight it now finds itself in. "We waited too long to look outside our offices and plants at what was happening at city hall, county courthouses, and the state capital," one manager said.

"Our hourly people are politically better informed than our engineers and other salaried people. The unions have seen to that," another asserted.

Now, many industry men are speaking out. They are making speeches—before local chamber of commerce groups, to professional societies, at state senate hearings.

Diving In: But just making speeches isn't enough, they have decided. "Get active in politics" is the keynote.

In Texas, the trend is to stay on local and precinct levels, to take political jobs that don't demand full-time —such as on school boards, city councils, or as precinct officers.

In Louisiana, almost all companies give men a leave of absence to serve in full-time jobs, such as mayor or even state legislator.

In both states, CPI people are being given formal courses in political action. These may be handled by local chambers of commerce or by plant people. The Texas Manufacturers Assn., since its program began in midsummer, has taught 450 management people in its public affairs training institute. They have gone back to their plants and taught 10,000 supervisors and other salaried employees. The stated object: to arouse interest in politics, not to promote candidates or issues to employees.

CPI firms most active in this area in Texas are Union Carbide, Diamond Alkali and Monsanto.

At Carbide, under the aegis of the plant superintendent, Thomas Wilker, a political action course is taught in six hourly sessions on company time. And Wilker has monthly meetings with supervisory people to acquaint them with local and state relations affecting Carbide and its employees.

Diamond Alkali has information sessions in the plant auditorium. Salaried people bring lunches and hear the news from the capitol, at Austin. Both sides of proposed legislation are presented, so the employees can form opinions and contact their legislators.

Bringing in the Pro: The CPI is also calling on the services of professional politicians. A Louisiana company (which doesn't want its name mentioned because of the state's "ticklish" political situation) has hired a well-known government official to take charge of government and community relations.

And last month, Texas State Senator Jimmy Phillips resigned after 18 years as an officeholder to join the legal staff of Dow at Freeport. Officially, Phillips will be a company attorney. But Vice-President A. P. Beutel observes, "We'd be foolish not to seek Jimmy's counsel and opinions on matters affecting Dow in governmental areas."

Advises Phillips: "I believe that every legislator is willing to listen to the case presented by industry people. The problem is to get them talking to politicians on a man-to-man basis."

Vanadium Verdict In

After winning all the earlier rounds, two leading producers of vanadium unexpectedly suffered a sharp setback last week in antitrust litigation now 13 years old. But the final rounds are still ahead.

Last week's turnabout: a jury in U.S. district court at Salt Lake City awarded to a group of mining and milling interests judgment of $4.5 million against Union Carbide Corp. and Vanadium Corp. of America (and three subsidiaries).

This was a joint trial of four private antitrust triple-damage suits (total $9 million) brought by 40 individuals who were conducting vanadium mining and milling operations in Colorado and Utah between 1938 and '45.

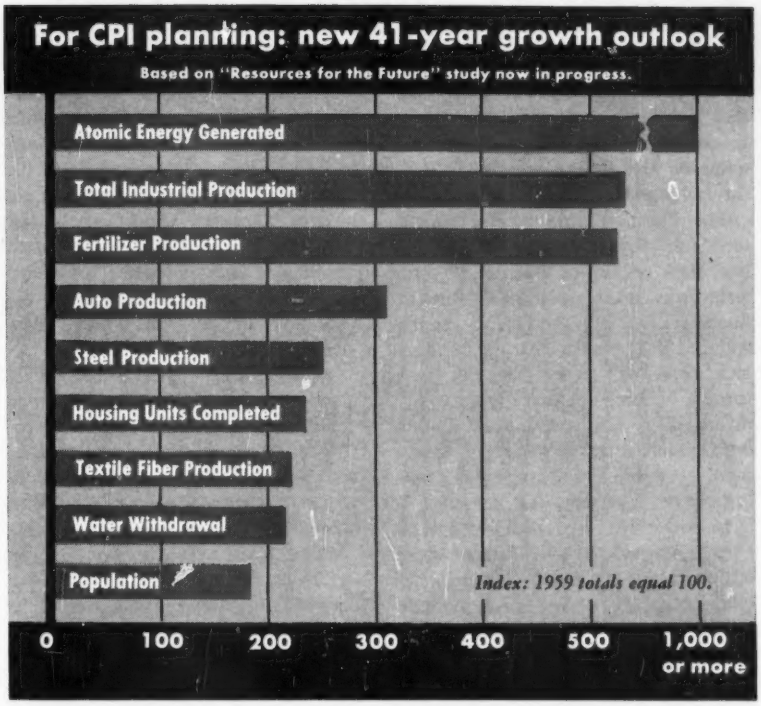
Their principal allegations: (1) a conspiracy on the part of the defendant companies to control markets and prices on vanadium ores, concentrates, and ferrovanadium; (2) nonpayment of the vanadium miners for uranium recovered and produced as yellow-cake by-products.

Acquittals: In previous courtroom clashes over substantially the same charges, both firms came out unscathed.

First came a criminal action in Denver in which the Justice Dept. accused the companies of an agreement to control vanadium oxide production in the U.S. and refusal to sell vanadium oxide to producers of ferrovanadium, thereby fixing prices of both ferrovanadium and vanadium oxide. This suit ended in acquittal in June '57.

Then Continental Ore Co. (New York) brought similar charges in federal court at San Francisco, seeking $1.6 million in treble damages. Again Carbide and VCA won acquittal.

Continental filed appeal in the San Francisco court of appeals, and this action is still pending. Now Carbide and VCA—which have claimed they were simply acting as agents of the U.S. government in buying the ores and concentrates—plan to ask the Denver circuit court to reverse the Salt Lake City verdict. So it's possible—particularly if the two circuit courts come up with opposite decisions—that these disputes may wind up in the U.S. Supreme Court, thus prolonging the litigation several years.



Telescope on Year 2000

New, long-range projections of industrial output and requirements — covering such problems as demand for process water in petroleum refining, nuclear heat for process industries, and U.S. policy on mineral imports—are flowing from Resources for the Future, Inc., a Ford Foundation-endowed institution that has just issued its seventh annual report.

Of interest to long-range planners in the CPI: a broad survey—now nearing completion—of the entire resource position of the U.S. this year and outlook through the end of this century (*chart, above*). Among the preliminary conclusions: use of fertilizers will increase more than fivefold over the next 41 years, climbing to 42 million tons/year (total nutrients); auto production will rise from 6.5 million to 20 million units/year, and atomic power will rocket from its present "negligible" quantity to 2,840 billion kwh./year—more than 50% of total electric energy to be generated in the year 2000.

Working in cooperation with government, universities and industries, RFF and its staff members are participating in numerous other studies of CPI significance. Among current and recently completed projects:

- Long-range price trends for primary commodities. The manuscript —written by an assistant professor of economics at Harvard and now being circulated for professional review— includes a chart showing that over the past 80 years, petroleum has increased in price by 50%, bituminous coal is up 30%, lime is up 5%, but sulfur is down 75%.
- Regional economic growth in the U.S., with emphasis on development and use of natural resources. The report on this study is now being prepared for publication. One finding, illustrated by a map showing degree of manufacturing specialization by counties: the substantial growth of manufacturing in the South and West since 1900 has consisted principally of activity based on processing the resources of these regions; the more rapidly growing fabricating industries continue to be centered in the Northeast and Far West.

RFF—headquartered in Washington—is headed by Chairman Horace Albright, former president of U. S. Potash Co.

Fluorspar Triggers a Turn

An old battle over fluorspar imports is taking a new turn—one that could sweepingly affect the broader fight being waged by various domestic industries on over-all U.S. foreign trade policy.

For the first time in its history, the U.S. Tariff Commission—which last week started a hearing on the state of health of the domestic fluorspar industry, and next month will begin a similar hearing on lead and zinc—will report to Congress specific "findings of fact" as to what, if anything, the government should do to improve those industries' competitive positions. This move was ordered by Congress last summer.

Conceivably, this could lead to Congress' first direct legislative action on a specific trade-tariff dispute in more than 25 years. Since Cordell Hull's original Trade Agreements Act was passed in '34, the Tariff Commission's specific recommendations—based on hearings held under either escape-clause or peril-point provisions of that act—have always gone straight to the White House for action.

Seeking Subsidies, Higher Duties: Now, however, the Independent Fluorspar Producers' Assn.—a small but active group of U.S. fluorspar miners and processors—has found warm friends in Congress. And these Congressional sympathizers are hoping to get from the commission findings of fact that would support not only a substantial tariff boost but also subsidies to domestic producers.

As of now, chances are slim for passage of this kind of legislation. For one thing, the fluorspar producers ran into stout opposition in last week's sessions from two other industry groups. One of these—the Fluorspar Importers and Producers Institute—challenged the constitutionality of the new procedure; it argues that this puts Congress "in a position to usurp" the tariff-and-trade powers that have been delegated to the President.

Chemical Companies' Stand: The fluorspar producers' other opponent is the Fluorspar Consumers' Committee, made up of blue-chip firms such as Aluminum Co. of America, Dow Chemical, Du Pont, Harshaw Chemical, Olin Mathieson, Pennsalt Chemicals, Stauffer Chemical and Union Carbide. In this group—organized last spring to fight the producers' unsuccessful attempt to have a fluorspar import quota law enacted—are makers of fluorine chemicals, and producers of fluorspar in "captive" operations in the U.S. and abroad. Their main arguments:

- That U.S. reserves of high-grade fluorspar are fast becoming depleted, and should be conserved.
- That future fluorspar demand will be more than keen enough to provide profitable markets for both U.S. and foreign output.

More Foes to Face: And on top of this opposition from industry, the domestic producers know they'll be up against strong foes in Congress. Then, in the unlikely event that such legislation were passed, it would run into stiffer objections from the White House, which is preparing to campaign through the General Agreement on Tariffs and Trade next fall for new U.S. exports concessions from other nations.

Nevertheless, fluorspar producers—incited by the $8 drop (to $45/ton) in domestic price of acid-grade fluorspar in the past year—are determined to press their bid along this new procedural line. They and their Congressional backers think they stand to gain more by pushing for special legislation—even if this involves trying to override a veto—than by waiting for piecemeal relief from the White House.

Fertilizer Financing

Additional storage facilities, a new phosphoric acid unit and added wharf and dock facilities all are in the offing for Coastal Chemical Corp. (Yazoo City, Miss.)—provided the company gets clearance from the Securities & Exchange Commission and is successful in a proposed offering of new common stock.

All the new stock—111,729 shares of Class A and 20,000 shares of Class C—will be offered for sale at $30 and $25/share, respectively. In addition, 50,000 previously issued Class C shares are to be offered by Mississippi Chemical Corp., a cooperative, also at $25/share.

Coastal, which manufactures high-analysis water-soluble fertilizers, will use the net proceeds for expansion and other working capital requirements. Mississippi Chemical has a voting control by ownership of 1 million Class B shares.

Early Year-Enders

Moving into a new year in which business—especially during the first six months—is expected to surpass all previous records (*see p. 63*), CPI companies whose fiscal years end in the autumn are generally reporting that '59 was their "best year yet." But there are indications that the squeeze on profits has been making itself felt again.

In the year ended Oct. 31, Firestone Tire & Rubber racked up peak sales and earnings despite three big handicaps: an eight-week strike at its own plants, lower volume of defense business, and curtailed auto production in October because of the steel strike. Firestone's sales rose 11.9%, to nearly $1.2 billion; and earnings climbed 20.2%, to $64.6 million.

Harshaw Chemical boosted sales nearly 17%, to $70 million, during the year ended Sept. 30, and net income mounted 32%, to $2.4 million. But results for this October-December quarter will be down because of local and steel strikes.

Alco Oil & Chemical's sales jumped 68%, to $5.3 million, and earnings—aided by a tax-loss carryover—bounded from $29,662 in fiscal '58 to $419,815 in the year to Sept. 30.

Despite a 4.5% gain in sales, A. E. Staley Mfg. sustained a 2.9% drop in net profit for the year ended Sept. 30. Sales and earnings—including figures for UBS Chemical, which was acquired June 30—totaled $168.7 million (a new record) and $5.7 million, respectively.

Plant construction and engineering business was down. Fluor Corp. reports that consolidated net sales for the 12 months ended Oct. 31 slipped about 8%, to $110 million; and—largely because of nonrecurring write-offs of $1.35 million—there was a net loss of $750,000 on the year's operations. In the previous year, net income was $1.9 million.

COMPANIES

The Meaker Co. (Chicago), maker of automatic systems for continuous and batch metal processing and finishing, has been purchased by Sel-Rex Corp. (Nutley, N.J.).

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Firmenich, Inc. (New York), has entered a long-term agreement to market aromatic products of Glidden Co. (Cleveland). Glidden will provide Firmenich with most of the aromatic products of its organic chemical division on an exclusive distributor basis. At research facilities in Jacksonville, Fla., Glidden has synthesized a series of terpene chemicals for the perfume and flavor industries.

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Norwich Pharmacal Co. (Norwich, N.Y.) stockholders have approved a two-for-one split of common stock. As a result of the split, the company will have outstanding 3,815,252 common shares at 62½¢ par value. And the company's Eaton Laboratories Division has established a new sales division and three new sales districts in Philadelphia, Indianapolis and St. Louis.

•

Albemarle Paper Manufacturing Co. (Richmond, Va.) has declared a 25% stock dividend on Classes A and B common stock payable Jan. 22 to stockholders of record Jan. 11. This move is contingent on a 25% increase in maximum authorized shares of Classes A and B common, with stockholders to vote on the charter amendment Jan. 5.

•

Texize Chemicals, Inc. (Greenville, S.C.), has acquired the capital stock of Industrial Products, Inc. Both companies have factories in Greenville, and distribute textile sizing and finishing products.

EXPANSION

Linear Polyethylene: Celanese Plastics Co. is expanding capacity for making Fortiflex high-density resin at its Houston, Tex., plant to 50 million lbs./year, will complete the program by March. Designed to have an original capacity of 40 million lbs./year, the plant is undergoing alterations to promote efficiency.

•

Refractories: Electro Refractories & Abrasives Corp. (Buffalo, N.Y.) is planning a $350,000 three-year expansion program, pending approval of directors. Contemplated: construction of a 33,000-sq. ft. addition to its plant at Lackawanna, N.Y.

•

Caustic/Chlorine: Consolidated Mining and Smelting Co. is breaking ground this month for construction of a $2.6-million alkali-chlorine plant at Trail, B.C. And the company has signed a sales agreement with Celgar, Ltd., which has a $50-million kraft pulp mill and new sawmill going up near Castlegar, 20 miles north of Trail. The company will supply liquid chlorine and caustic soda for pulp manufacture, and produce potassium hydroxide for use at Trail in its own processes.

•

Cement: Medusa Portland Cement Co. (Cleveland) will purchase limestone lands and increase production capacity. The $9-million program is the first step in a 10-year, $70-million expansion and modernization plan set last August.

•

Petroleum Products: Canadian Oil Companies, Ltd., is budgeting $8 million in Alberta next year. About $4 million will be spent on its new Innisfail refinery; the rest on oil exploration and development as well as increased market operations in that province. Capacity of the new refinery: 5,000 bbls./day, with built-in design to double capacity. Completion is targeted for next fall.

•

Coke, Chemicals: Bethlehem Steel Co. will build a new battery of 76 coke ovens at Buffalo, N.Y., expanding coke-making capacity at that location by 20%. Estimated costs: $7.5 million. Completion is scheduled for next November. This eighth battery of ovens will add 500,000 tons/year to the plant's capacity. Ultimate rated total capacity: 3 million tons/year.

FOREIGN

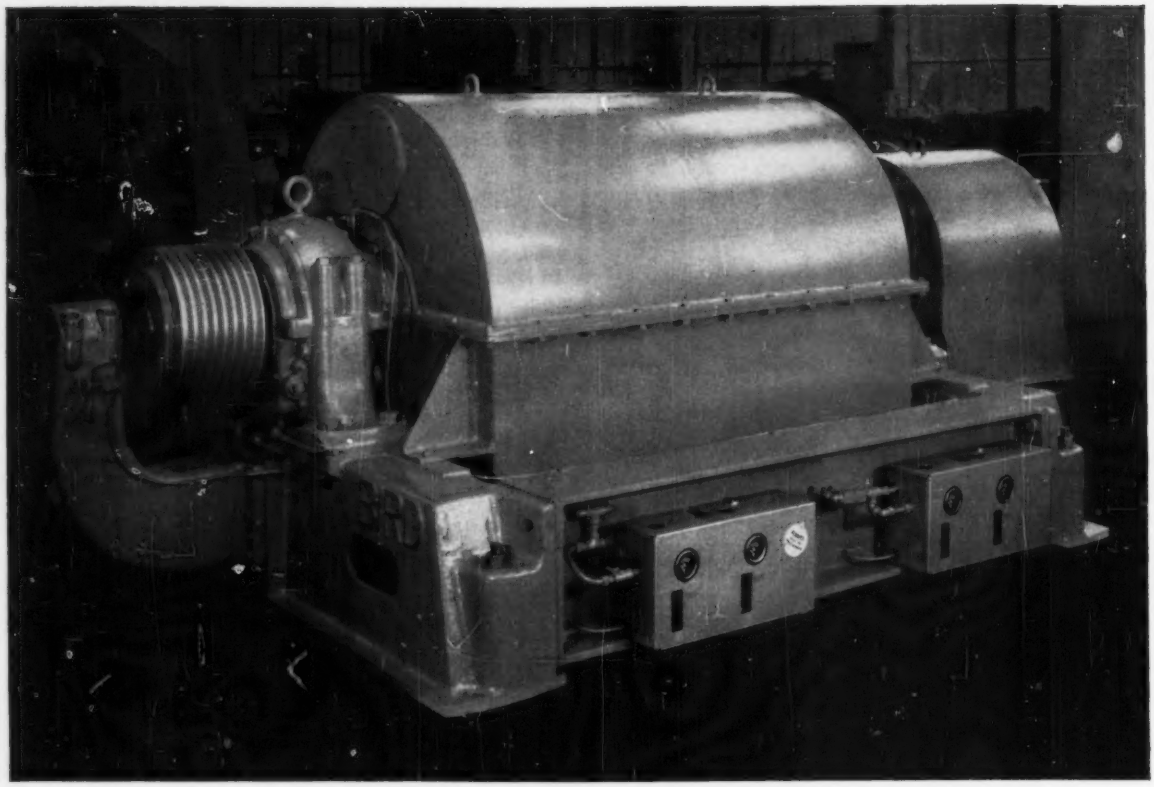
Pigments/West Germany: Du Pont and Sachtleben AG. (Cologne, West Germany) have formed a jointly owned subsidiary, Pigment-Chemie GmbH., to produce titanium pigments for the paint, rubber, plastics and paper industries. Initial capitalization: $8.33 million. Sachtleben will own 74%; Du Pont, 26%. The plant will be constructed at Sachtleben's lithopone plant on the Rhine River. Startup is expected in about two years, with Du Pont providing technology and startup assistance. Rated capacity: 40 million lbs./year.

•

Fibers/England: The Second World Congress for Man-Made Fibers will take place in London, May 15-18, '62. Textile technology and economics papers will be presented, reports the organizer, Dr. L. Landsman, International Rayon and Synthetic Fibers Committee (Paris).

•

Equipment/Russia: Three big orders have been placed in England and Scotland by Techmashimport, the State Trading Agency of Russia. Contracts have been closed for a complete, $1.8-million, 9,000-long tons/year polystyrene plant from P. G. Engineering (London); two 330-metric tons/day newsprint machines to be manufactured by Black-Clawson (Newport, Eng.) at a total cost of $12 million; and a 10-unit synthetic rubber unit costing more than $1.4 million, from John Dagleish & Co. (Glasgow, Scotland).



1960 MODEL?

Frankly, it would be difficult to tell by glancing at the exterior of a Bird Continuous Solid Bowl Centrifugal whether it was built *this* year or a quarter century ago. Old or new, you can always tell a Bird by its clean, compact, uncluttered look.

But in design, construction and performance you'd find a big difference between the old timer and the latest model, because technical changes and improvements have been and are being made all the time. Successful applications are not achieved by routine formula or by compromise. They are based on years of observation and experience, and backed by the Bird Research and Development Center which has the experts and the equipment to conduct authentic tests.

The "1960 Model" Bird is the Bird that meets the exact needs of your flow sheet: for *capacity* (from 200 to 120,000 lbs. per hour); for *separating force* (from 30 to 3000 g); for *wash* (with efficient, countercurrent action); for *operation under pressure* (if desired); for *design itself* (the Bird comes in seven sizes, each subject to twenty-five design variations to meet the exact requirements of the job).

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THE BIRD CONTINUOUS SOLID BOWL CENTRIFUGAL

Washington
Newsletter

CHEMICAL WEEK
December 26, 1959

Reports that Castro will try to nationalize Cuba's entire economy are bolstered by a tough line on export and import controls. Cuban officials say the import restrictions are being applied to tide the island over a slipping dollar reserve position until this year's sugar crop is sold.

U.S. government and Freeport Sulphur Co. are trying to win export tax concessions. Both are holding up shipments of nickel and cobalt. The licensing of U.S. exports to Cuba would cut back shipments across the board.

Other clues to the reported nationalization: Cuba has filed a sealed bid with the U.S. for its Nicaro plant, which is up for sale; new economic czar Ernesto Guevara has ordered foreign-owned businesses to help train Cuban revolutionary soldiers to run them; the Cuban government has "intervened" for a six-month period in the labor disputes of several private firms.

Firms with small capital investment are deserting Cuba in increasing numbers; bigger firms hope to salvage as much as possible.

•

Legislation affecting manufacturers of pesticides is in the talk stage at Dept. of Health, Education & Welfare. The idea would be to require a manufacturer applying for a license to submit techniques for testing residues in food. Part of the trouble in the cranberries case was that at the outset the Food & Drug Administration had no rapid method of testing for residues of the weed-killer aminotriazole. So when contamination was found, it took a long time to separate the good from the bad.

•

Tax depletion allowances for mining firms that process mined raw material into semifinished or finished products is at issue in a significant case the Supreme Court has agreed to review.

Under the law, the processor is given depletion allowances ranging from 5 to 27½%, a tax deduction from gross income of mining operations. The government wants to limit the number of steps beyond mining to which the depletion allowance will apply. Government tax men figure the existing ruling, which grants allowances on steps far beyond the mining stage, will cost the government more than a half billion annually if not reversed.

Two other cases the court will review deal with the difference between tax-free gifts and taxable income. In one case, a Dayton, O., businessman treated as nontaxable a Cadillac received from a business friend as a gift for supplying names of potential customers. In another, the taxpayer is appealing a government victory in treating a $20,000 payment by a church to a retiring official as income, though the church intended it as a gift.

Washington Newsletter

(Continued)

A 5% increase in imports of residual fuel oil, used mainly to fire boilers, has been authorized for the first six months of '60 under the government's program controlling oil imports. The extra oil assures adequate winter supplies, particularly in the East.

The increase of 80,000 bbls./day above present levels followed the pleas of major companies that they could not meet customer demands east of the Alleghenies.

•

The way the steel referendum is carried out will be significant in interpreting results. Observers agree that the great majority of workers will stick by the union. But there's a feeling David McDonald must win a majority of 75-80% to claim a moral as well as a numerical victory.

The vote will be taken separately—by company, perhaps even by divisions of companies or by plant. Thus, individual units may accept a company's "final offer" even though the over-all vote rejects it. Also there will be a variety of final offers in different companies, particularly on work rules. McDonald wants the voting units packaged to spread out the dissidents among various units; management wants a different division of units. The National Labor Relations Board, which makes the decision, is in the middle. The vote takes place during several days between Jan. 7 and Jan. 21.

NLRB and the Administration want a prevote settlement, but chances for this look slim.

•

Plans for capital investment have been whittled down as a result of the steel strike. That became increasingly clear with the release of the government's latest survey of businessmen's spending plans.

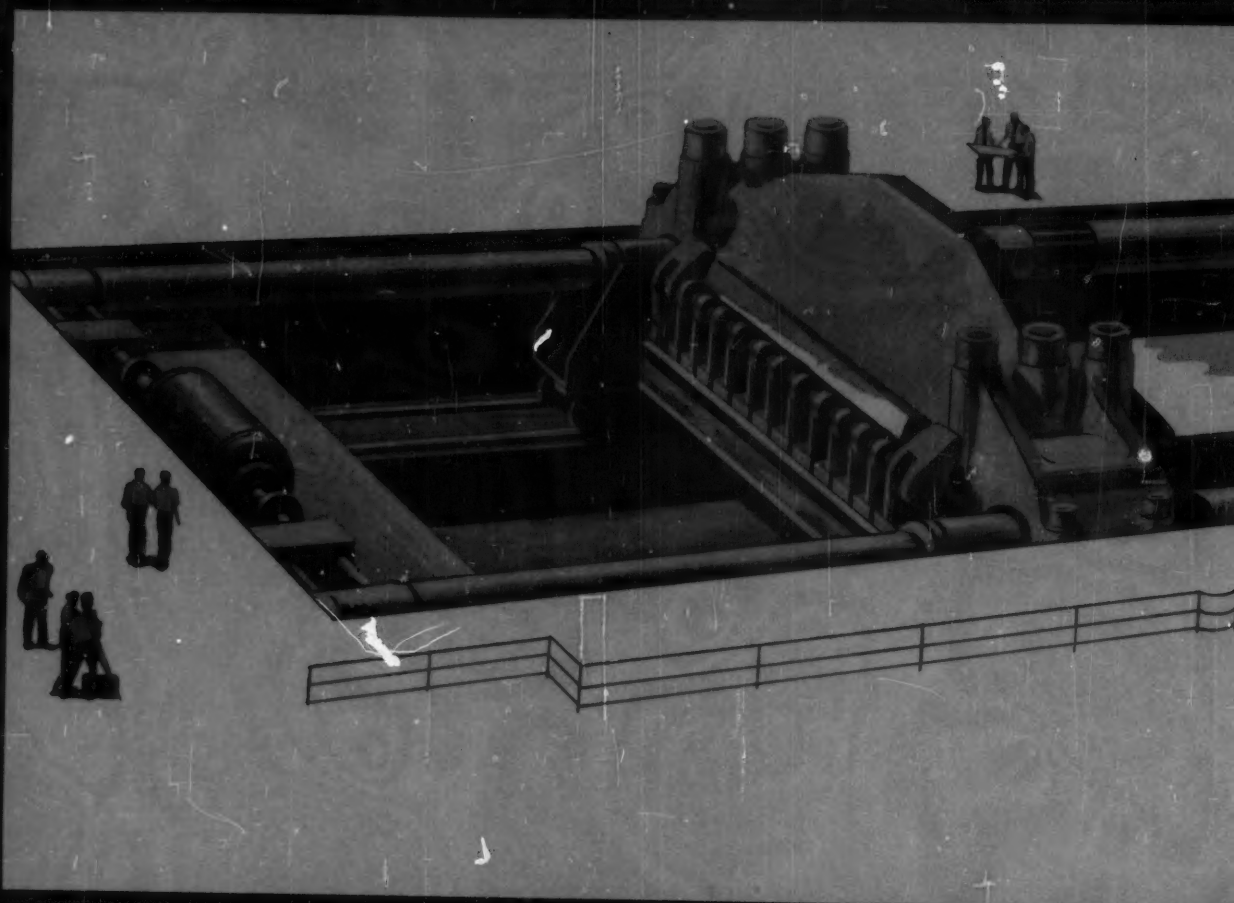
Each quarterly survey through '59 showed increases, reflecting confidence in the boom. But the December survey shows declines across the board, particularly in iron and steel, petroleum, railroads, gas and electric utilities.

Estimated spending during first-quarter '60 will be 15% higher than the average in '59. But the increase over fourth-quarter '59 is the smallest quarter-to-quarter increase in a year. Manufacturing, especially durable goods, is the only business category showing a first-quarter increase. This reflects the more adequate steel supplies.

•

The White House is trying to smooth things over between H-E-W Secy. Arthur Flemming and the Agriculture Dept. Agriculture officials are miffed at the way Flemming has "done in" cranberries and chickens, and want to avoid any repeats. White House staffers have worked up a memo to guide future actions. Reading between the lines, it suggests more effort to clear out possibly contaminated supplies before alarming the public about the safety of a whole crop.

To serve
aluminum's
expanding
markets
Kaiser
Aluminum
announces

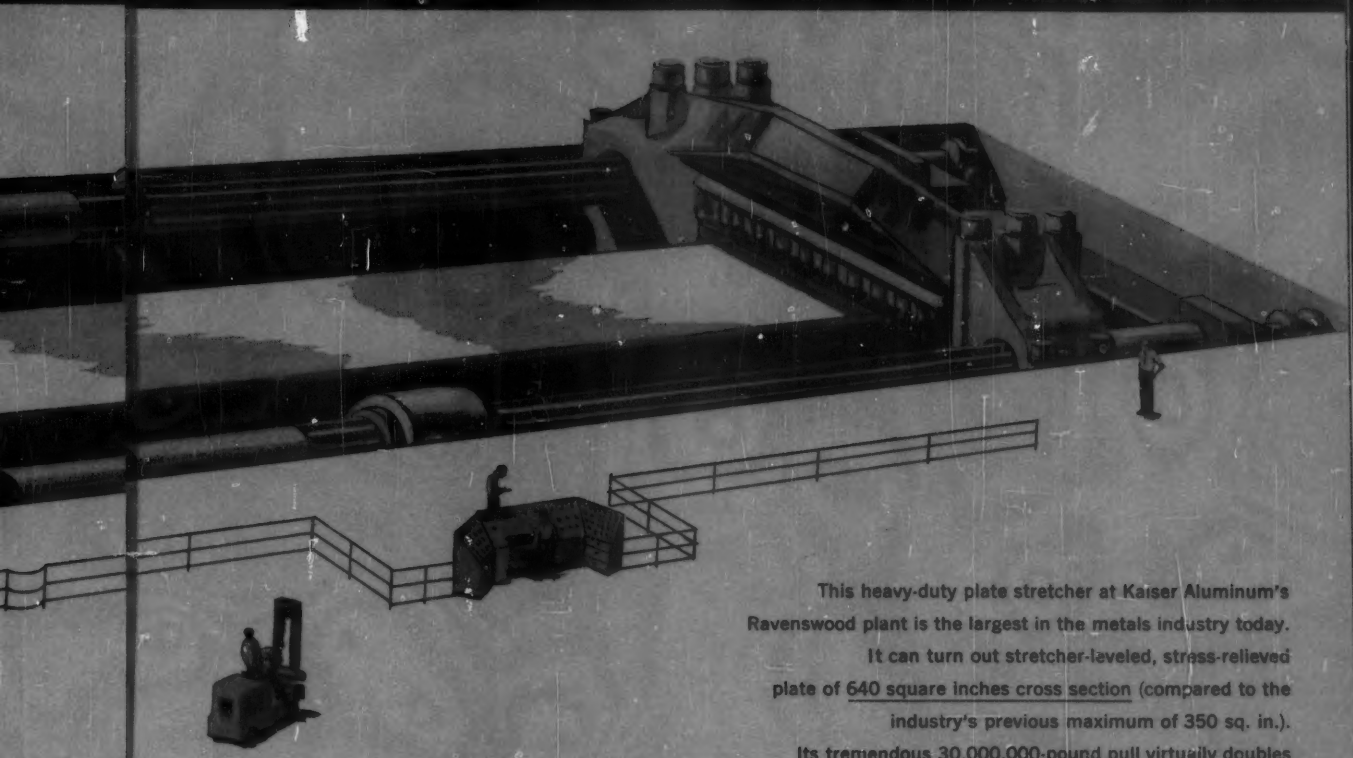


THE LARGEST PLATE STRETCHER IN OPERATION TODAY:

30,00

With the completion of this giant new stretcher at Ravenswood, West Virginia, Kaiser Aluminum supplements its newly-installed rolling facilities to provide heavy plate in specifications beyond any previously available. These new availabilities, added to those already provided by the company's 10,000,000-lb. stretcher at Trentwood, Washington, now offer aluminum users the widest range of stretcher-leveled and stress-relieved sheet and plate in the industry.

Just as the Trentwood stretcher opened up new possibilities for heavy plate when first installed, the new Ravenswood stretcher promises to pioneer still further developments in heavy plate application. Greater plate sizes open up



This heavy-duty plate stretcher at Kaiser Aluminum's Ravenswood plant is the largest in the metals industry today. It can turn out stretcher-leveled, stress-relieved plate of 640 square inches cross section (compared to the industry's previous maximum of 350 sq. in.). Its tremendous 30,000,000-pound pull virtually doubles any previously-existing capacity.

0,000

POUNDS PULL

Maximum Plate Dimensions:
160 inches wide
60 feet long
6 inches thick

640 SQUARE INCHES
CROSS SECTION

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or
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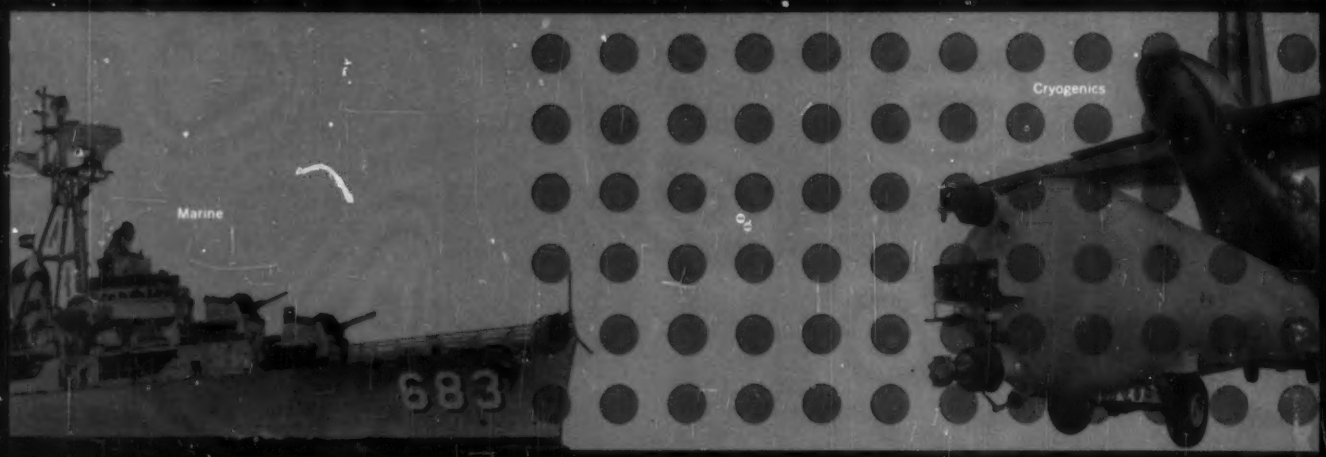
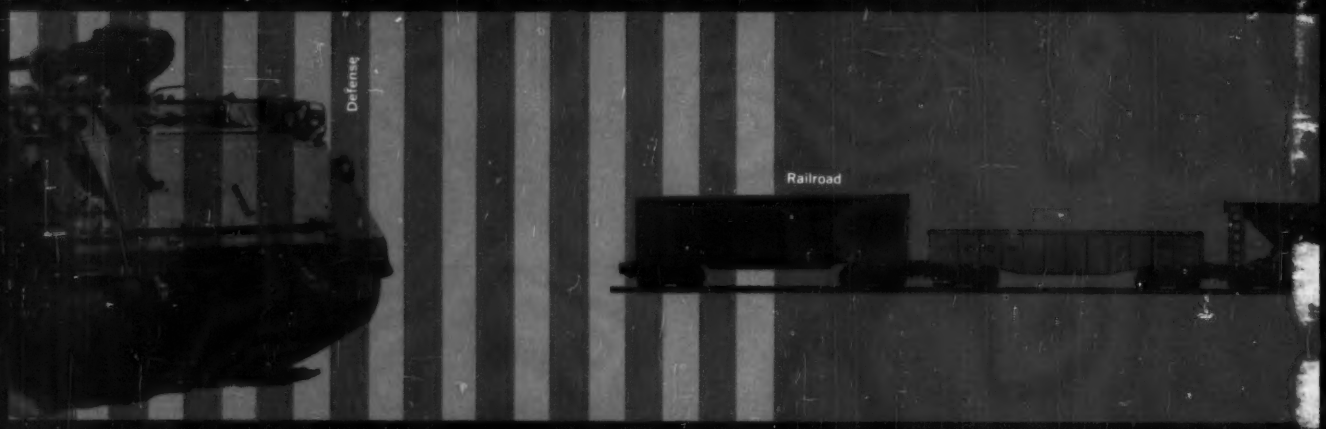
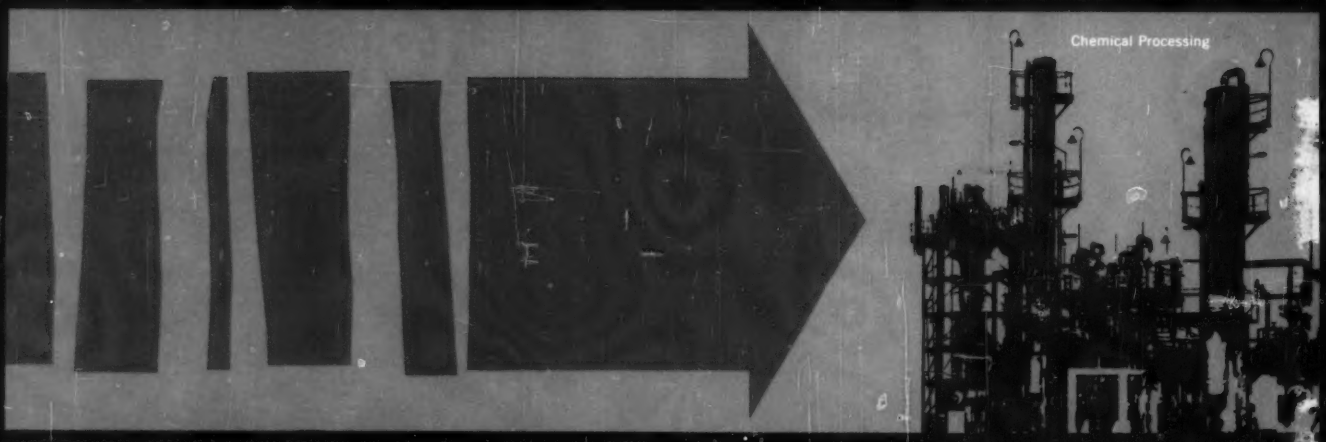
provocative new design potentials . . . permit elimination of fabricating operations with resulting lower costs.

For some of the fields served by these new developments, please turn the page.







KAISER ALUMINUM'S GIANT NEW PLATE STRETCHER IS READY NOW TO SERVE THESE MARKETS...

—as shown on this page. Its extra-wide, 160-inch jaws make possible new fabricating economies for hundreds of industrial applications for stretcher-leveled sheet and plate, and for aircraft applications of stress-relieved sheet and plate. A special technical staff is available to provide on-the-spot consultation in design and application of the new heavy-plate availabilities.

Get the fascinating story of the unique design and operation of this mammoth stretcher, plus full information on how Ravenswood can serve you. Call the Kaiser Aluminum Sales Office listed in your telephone directory . . . or write for the detailed new brochure, "30,000,000-pound Plate Stretcher."

TYPICAL HEAVY PLATE APPLICATIONS

- Trailers
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- Radio and Radio-Telescope Panels
- Armor Plate
- Bridges
- Structural Components
- Tooling Plate
- Landing Mats
- Aircraft Components
- Cryogenic Equipment
- Storage Tanks
- Over-The-Road Tankers
- Chemical and Petro-Chemical Plants

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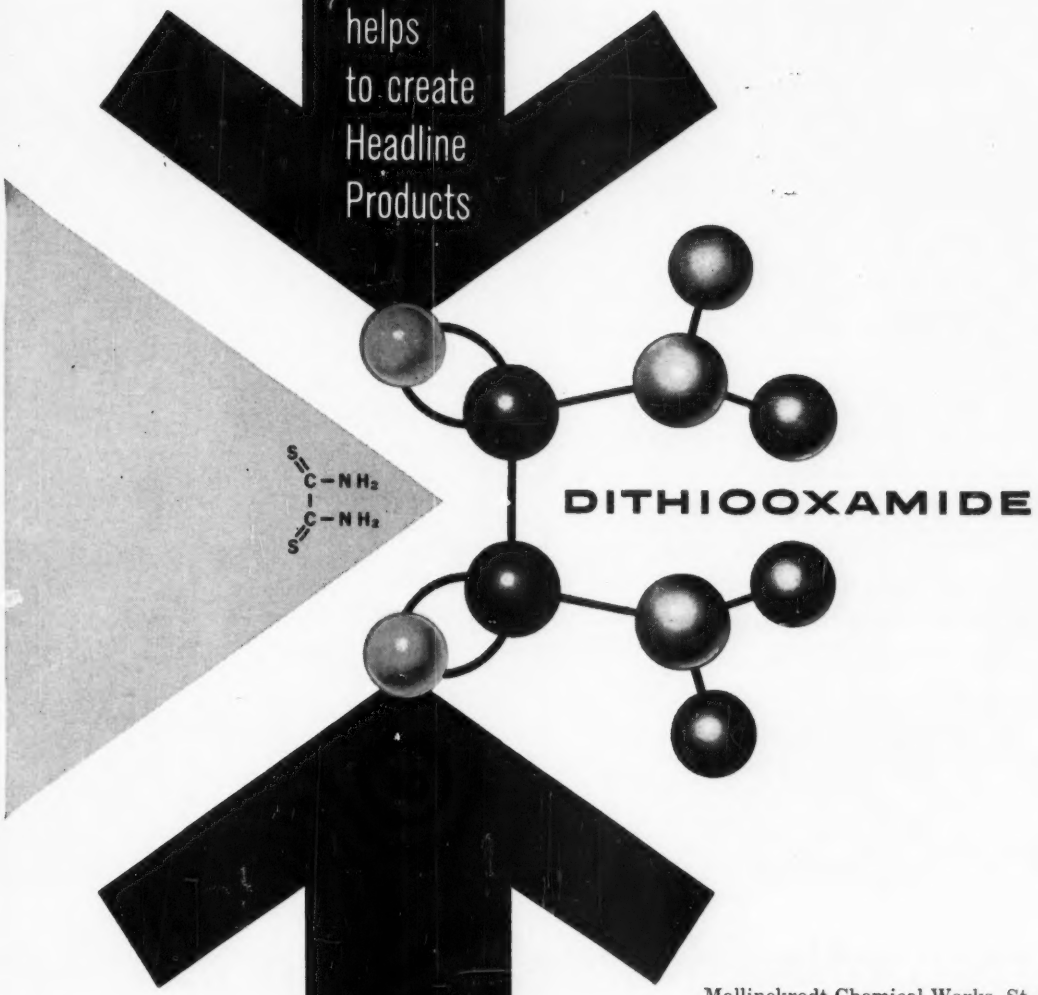

DITHIOOXAMIDE

Mallinckrodt Chemical Works, St. Louis, Missouri, recently announced this new building block...a chemical that can go in many directions to create new and better products. For example, the manufacturer suggests applications for dithiooxamide and its derivatives in the fields of metal sequestrants, pigments, organic intermediates and plant growth regulators.

A new building block with many potentials ...and as with so many such chemicals, Sulphur is a key ingredient!

Our business is to produce Sulphur ...to keep adequate supplies on hand at our production units...to deliver it in solid form by rail, barge or ship; in molten form in trucks, tank cars, barges, or ships. All of the properties listed below can supply both solid and molten Sulphur.

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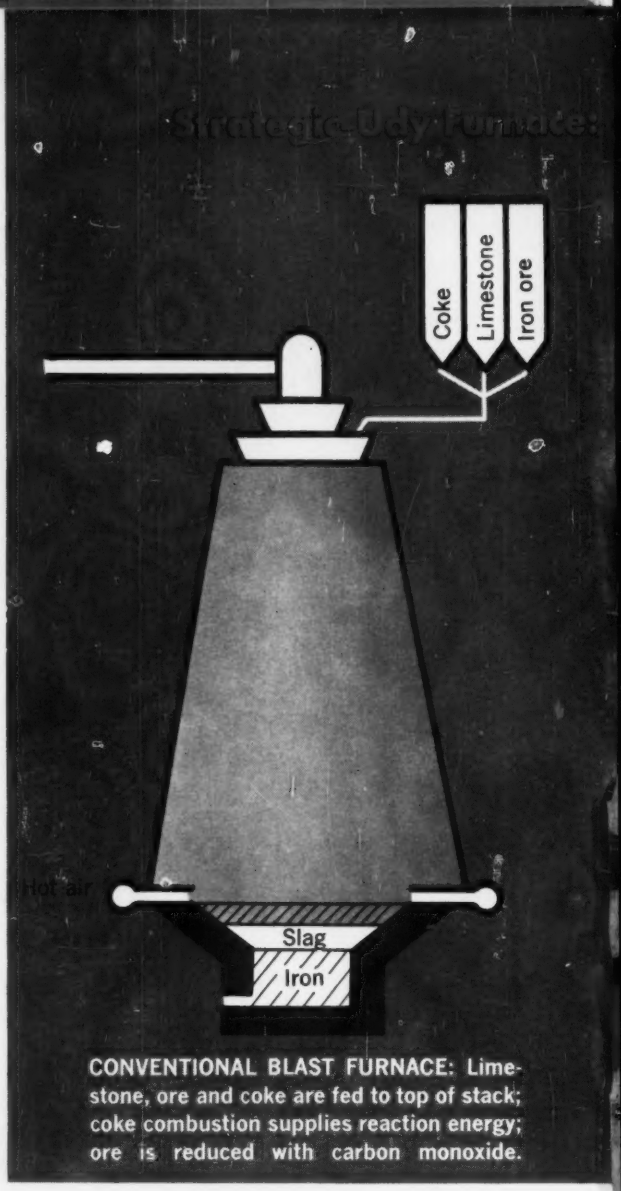


CONVENTIONAL BLAST FURNACE: Limestone, ore and coke are fed to top of stack; coke combustion supplies reaction energy; ore is reduced with carbon monoxide.

Strategic-Udy has chopped the stack off the conventional blast furnace and turned it on its side. This smelting process makes steel directly from low-grade iron ore and coal, threatens a technical steel production breakthrough.

Streamlined Steelmaking Smelter

The Strategic-Udy steelmaking process is being groomed for its North American debut. Quebec South Shore Steel Corp., a newly formed Canadian producer, has contracted for a $22-million S-U plant scheduled for completion at Varennes, Que., by the end of next year.

This new plant is part of a technical breakthrough that may alter the nature of America's steel industry. The Strategic-Udy process is not totally new here; it has been used to extract manganese from ore (*CW, Feb. 9, '57, p. 40*). But the Quesco installation will mark its debut in steelmaking. Implications for the steel and the chemical processing industries:

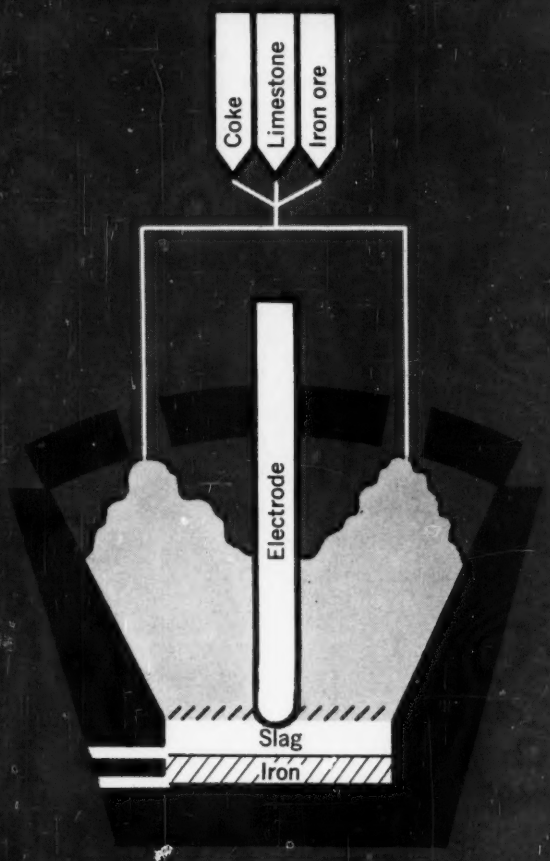
(1) Coke ovens and their coal chemical by-products may disappear, since the S-U process uses coal instead of coke.

(2) Small steel companies may become standard, or related companies may create steelmaking divisions, because the S-U process can operate economically on a small scale.

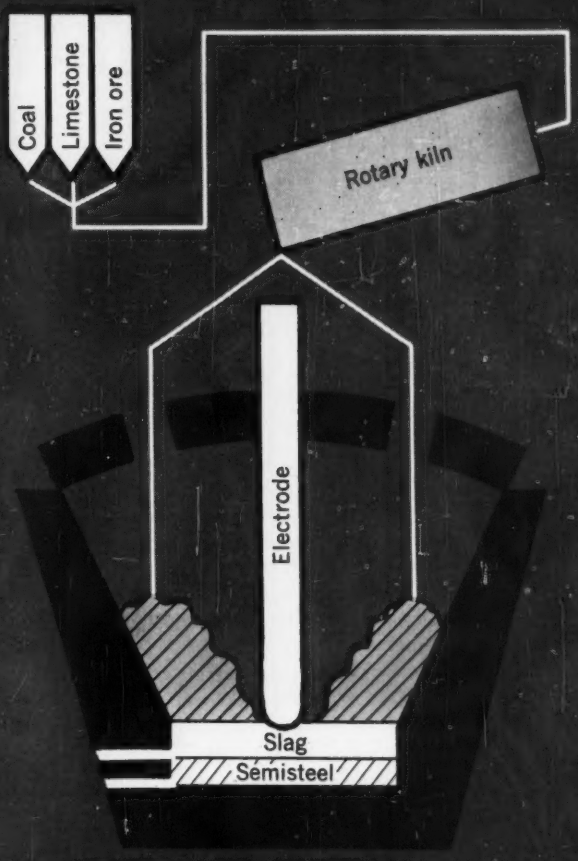
(3) Steel-refining processes (e.g., open-hearth furnaces) may shrink in importance, since the S-U process can be controlled to make either iron or semisteel.

Basic Principles Still Hold: The key to the S-U process is a rotary kiln, which replaces the stack of the blast furnace and the bed of solids in conventional electric smelters (*see drawings above*). "Basically," says Frank Senior, general manager of S-U's Niagara Falls, Ont., pilot plant, "the Strategic-Udy process is still the same as the old blast furnace. We've just chopped off the stack and turned it on its side."

But this makes a big difference. The carbon source, for example, can be changed. The prime requisite of blast furnace coke is strength: strength to support a towering mass of limestone and ore without crumbling into an impermeable powder. If the towering



LOW SHAFT ELECTRIC FURNACE: Limestone, ore and coke are fed directly into the furnace; electric resistance of solids supplies heat; ore is reduced by coke.



STRATEGIC-UDY SMELTER: Limestone, ore and coal are fed to kiln; burning coal supplies heat, reduces ore; resistance of slag supplies heat for melting iron.

Sidesteps Coke-Oven Chemicals

mass is turned on its side, strength serves no purpose, and coal serves as well as coke as a reducing agent.

Removing the burden also allows production of a semisteel with less carbon content than blast furnace iron. In the blast furnace and electric smelters, the weight of ore and stone forces lumps of coke down into the bath of molten iron in the hearth. These lumps dissolve, increasing the iron's carbon content.

A second trick of S-U is the position of the furnace electrode. Unlike conventional electric smelters, in which the electrodes are suspended in the mass of ore, limestone and coke, the S-U furnace electrode dips into the slag bath. This allows the bath to receive ore that has been reduced until it is almost 50% metallic fines, thus lowers current requirements, permits use of lower-grade ores in the kiln.

Existing Competition: Steelmakers, however, have learned to drain every bit of profit from blast furnaces and coke-oven installations. Despite the apparent advantages of reducing cheap ore and using coal instead of coke, the loss of coal tar by-products and the cost of electricity—each figured at $6/ton—make S-U as expensive to operate as a blast furnace. The real savings are found in (1) installation costs, estimated at $50 million for a blast furnace vs. $20 million for the S-U plant to produce 1,200 tons day, and (2) the final conversion into steel, estimated at $17/ton for conventional pig iron vs. $10/ton for S-U semisteel.

Hence, the big steel companies will hardly scrap existing facilities to switch to the S-U process; only the necessity for major repairs could force a changeover. But the normal attrition of blast furnaces is such that they are continually renewed and repaired without waiting for a turnaround operation. The biggest job—

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relining — occurs only about once every seven years. And it is not certain that this could justify scrapping the furnace. Therefore, a switch to S-U would most likely come from outside the steel industry--by a company that, like Quesco, would be new to steelmaking.

Small but Feasible: The foregoing brings out the importance of S-U's second outstanding characteristic: the ability to operate economically on a small scale. New small companies or large steel consumers may find it attractive to make their own steel. A closer look at Quesco suggests the kind of operation they would undertake.

Ore from the Hull mines will be reduced with coal and limestone in the kilns, smelted in the S-U furnace. Either pig iron, with controlled silicon, or semisteel will be produced. The iron will be sold locally, while the semisteel will be converted into SAE Grade 1035 and rolled into bar and merchant shapes.

Some experts see Quesco's move as the start of a trend by small companies to produce relatively small quantities of steel via new routes that bypass the blast furnace. The Varennes plant, for example, is slated to turn out 120,000 tons/year of rolled steel products from crude ore supplied by Quesco's recently acquired Hull Iron Mines, Ltd. Design and construction of the plant is being handled by Koppers Co., Strategic Materials Co. and Electrokemisk A/S (Oslo, Norway).

Coke-Oven Chemicals: If the S-U process proves competitive in small-scale production, major steelmakers will likely find ways to use it for plant expansions or replacements. CPI firms particularly would feel the effect of such a switch, since they depend on coke ovens for a large part of several basic chemicals.

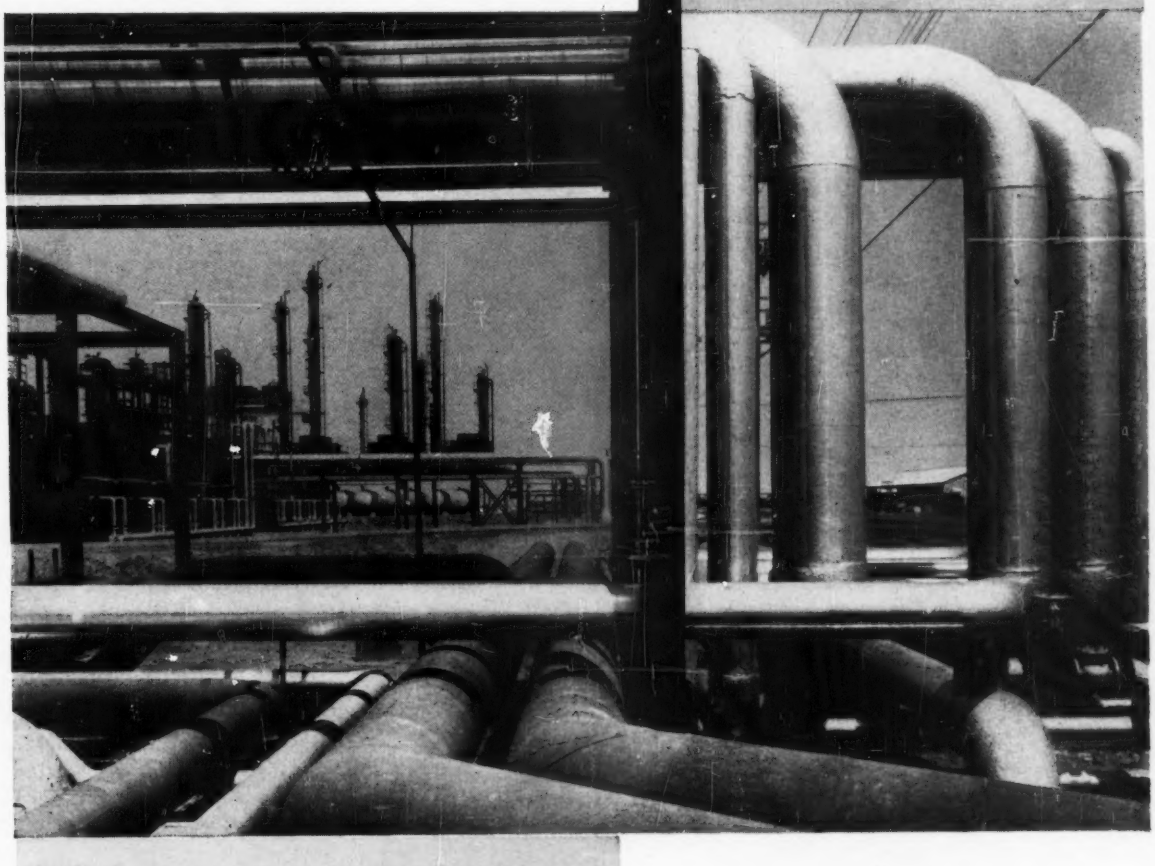
In '58, for example, steelmakers supplied 40% (118.3 million gal.) of the total U.S. benzene output, 11% (28.1 million gal.) of toluene, 25% of the solvent naphtha (4.4 million gal.), 37% of the ammonium sulfate (640,000 tons).

Although the demise of blast furnaces would cut off this sizable supply of coal chemicals, the CPI can rest assured that the steel industry's switch in processing methods will be evolutionary rather than revolutionary.

FAIR EXCHANGE: Acetic anhydride for "wash-'n-wear"

Due to their hydrophobic characteristics, synthetic fibers are increasingly popular in the "wash-'n-wear" market — with such organic chemicals as acetic anhydride as basic raw materials. Using their own direct oxidation process, with butane and propane as the normal charge, Celanese Corporation of America produces an entire series of these chemicals at its Pampa, Texas plant (below) . . . acetic anhydride, acetic, propionic and butyric acids, acrylate esters, vinyl acetate, acetaldehyde and methanol.

Western heat exchangers, performing with characteristic reliability and efficiency, have played an important role in heat transfer applications in the oxidation process at Celanese-Pampa since its initial construction in 1952.



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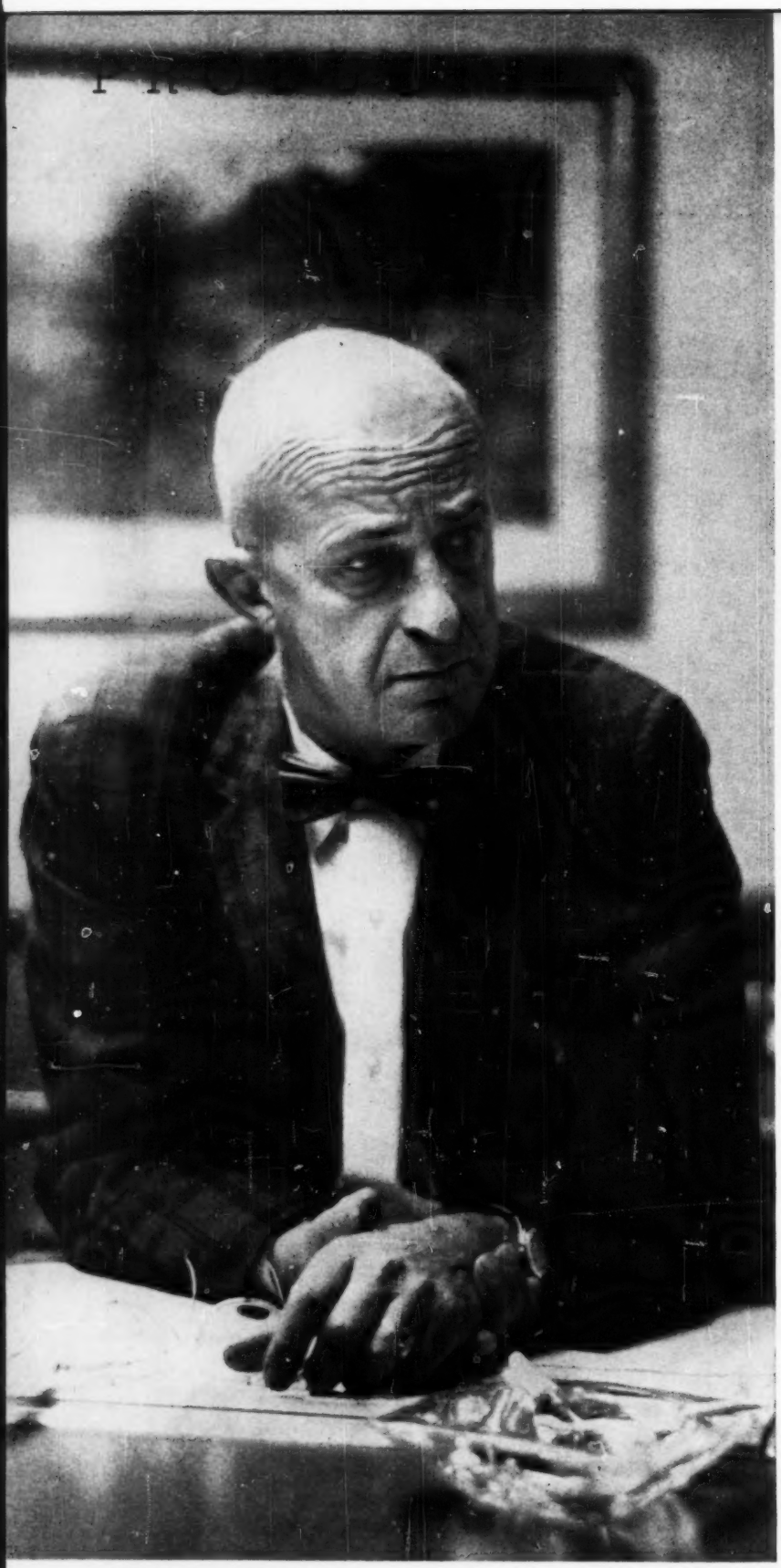


LEADER: Du Pont's Bob Hurley coordinates instrumentation activities.

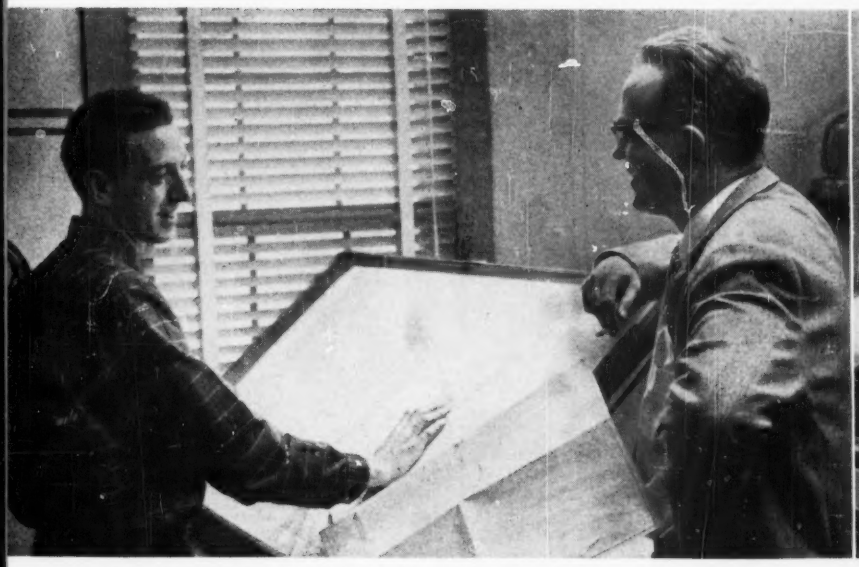
LIEUTENANT: Quigley (right) leads construction and maintenance crews.

Instrument

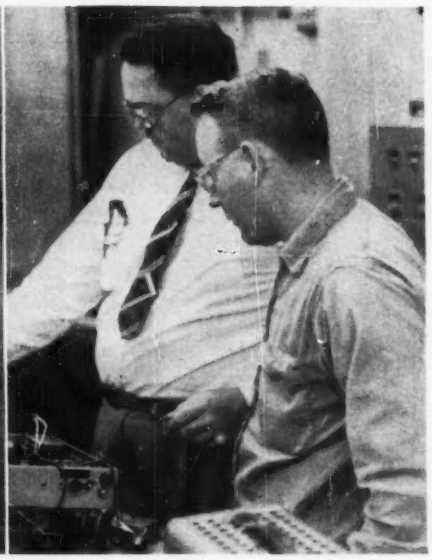
If the instrument section at Du Pont's Chambers Works (Penns Grove, N.J.) totaled the list of visitors to its new repair shop, now nearing completion, the number would be close to a thousand. The guest instrument engineers from other Du Pont plants and other companies have come to study the integrated shop (built and equipped at a cost of $100,000) that can repair 200-250 instruments each week.

The new shop, however, represents more than an efficient fix-up unit; it's the focal point of the Chambers Works' coordinated instrument program which knits together the research, development, engineering, maintenance and construction activities that pertain to instruments. This teamwork hasn't come as easily or speedily to the World War I built Chambers Works (which Du Pont bills as the largest chemical plant in the Western Hemisphere) as it might have to a newer plant. But its success there is particularly significant in proving the value of the coordinated approach.

In the Beginning: The team approach at Chambers began in '55, sparked by the startup of the plant's

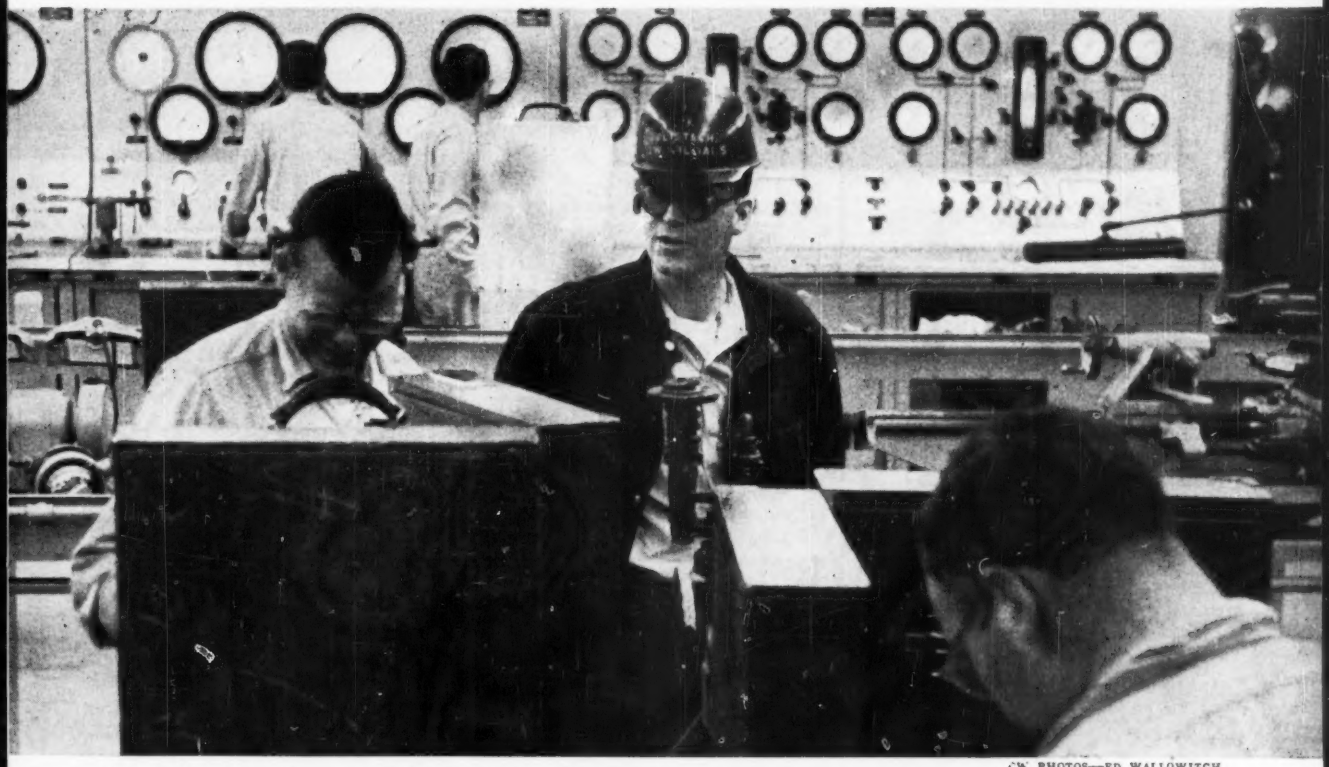


LIEUTENANT: Read (right) heads engineering group, specifies instrument designs, sends them to Quigley's crew of engineers based in repair shop.



TEAMWORK: Engineer Reilly, mechanic Hamm solve repair problem.

Team Runs Up Efficiency Score



CW PHOTOS—ED WALLOWITCH

RESEARCH: Technical section's Williams (left) visits repair shop, discusses new project with mechanic Harris.

Ethers of Hydroquinone

Here are two exciting new chemicals from Ansul. H.A. has been effective in stabilizing chlorinated hydrocarbons, motor fuel, rubber . . . as a non-staining anti-oxidant and valuable intermediate. The sun-screening properties of D.M.B. offer possibilities as a weathering agent in paints, lacquers, plastics and in sun-tan lotions and creams. Its sweet-clover odor may suggest use in cosmetic formulations. We will also be glad to send you our latest technical bulletins or samples of these promising chemicals.

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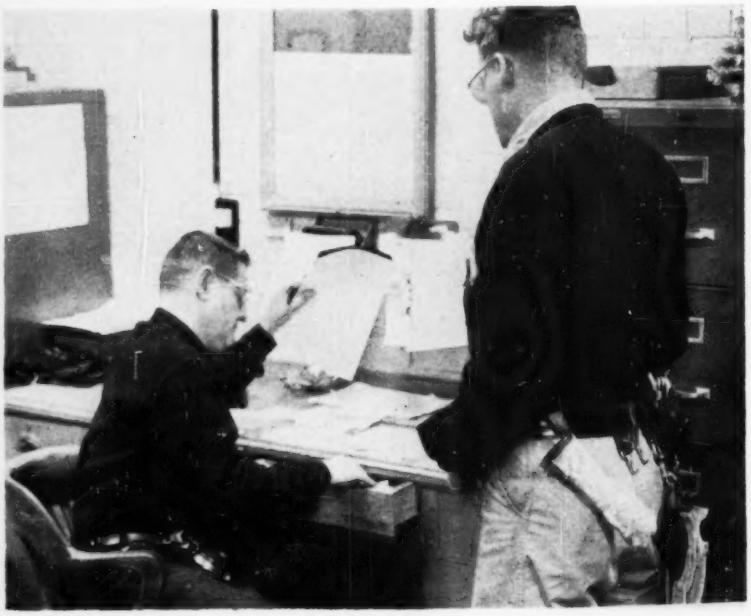
FIRE FIGHTING EQUIPMENT
INDUSTRIAL CHEMICALS

Physical Properties Compound	H. A. para Methyoxy Phenol	D. M. B. para Dimethoxy Benzene
Chemical Formula	$CH_3OC_6H_4OH$	$C_6H_4(OCH_3)_2$
Molecular Weight	124.13	138.16
Boiling Point °C		
760 mm. Hg.	243°	213°
100 mm. Hg.	175°	140°
50 mm. Hg.	160°	123°
10 mm. Hg.	126°	89°
Melting Point °C	53°	56°
Density gms./ml. (65°C)	1.1106	1.0293
Solubility (25°C in gms./100 gms. solvent)		
Water	4.1	Insoluble
Benzene	69.5	177.0
Acetone	426.0	233.0
Ethyl Acetate	245.0	150.0
Alcohol	456.0	33.3
Color	Tan to white	White
Odor	Characteristic	Sweet Clover

ANSUL CHEMICAL COMPANY • MARINETTE, WISCONSIN



FIELD WORK: Foreman List (left) assigns plant repair job from area shop.

new Hylene (polyisocyanates) unit. Up to that time, the instrument work was divided among four groups. Design, construction and maintenance were separate functions with little direct tie-in of responsibility. The fourth group, the plants technical section, did research and development work on new instruments as part of its over-all research and development functions for the Chambers Works and the Organic Chemicals Dept.

But with construction of the Hylene unit, a separate instrument group was set up, with sole responsibility for startup and maintenance of the new, highly complex unit. And plant management quickly realized the advantages of such a group for the entire plant—within one month Bob Hurley was shifted from head of the Hylene instrument group to a newly created post in charge of all plant instrumentation. All independent instrument functions—except research and development, which remained in the technical section—were consolidated under Hurley in a closely knit team.

The Team: Ten design engineers, headed by Ed Read, specify plant instrument designs, pass them on to five maintenance and construction engineers, headed by Thayne Quigley.

Plant requests that require design of new types of instruments are assigned to the technical section, which works with the new instrument team's groups as necessary.

The design engineers also check field performance of installations, carry out major trouble shooting at Quigley's request.

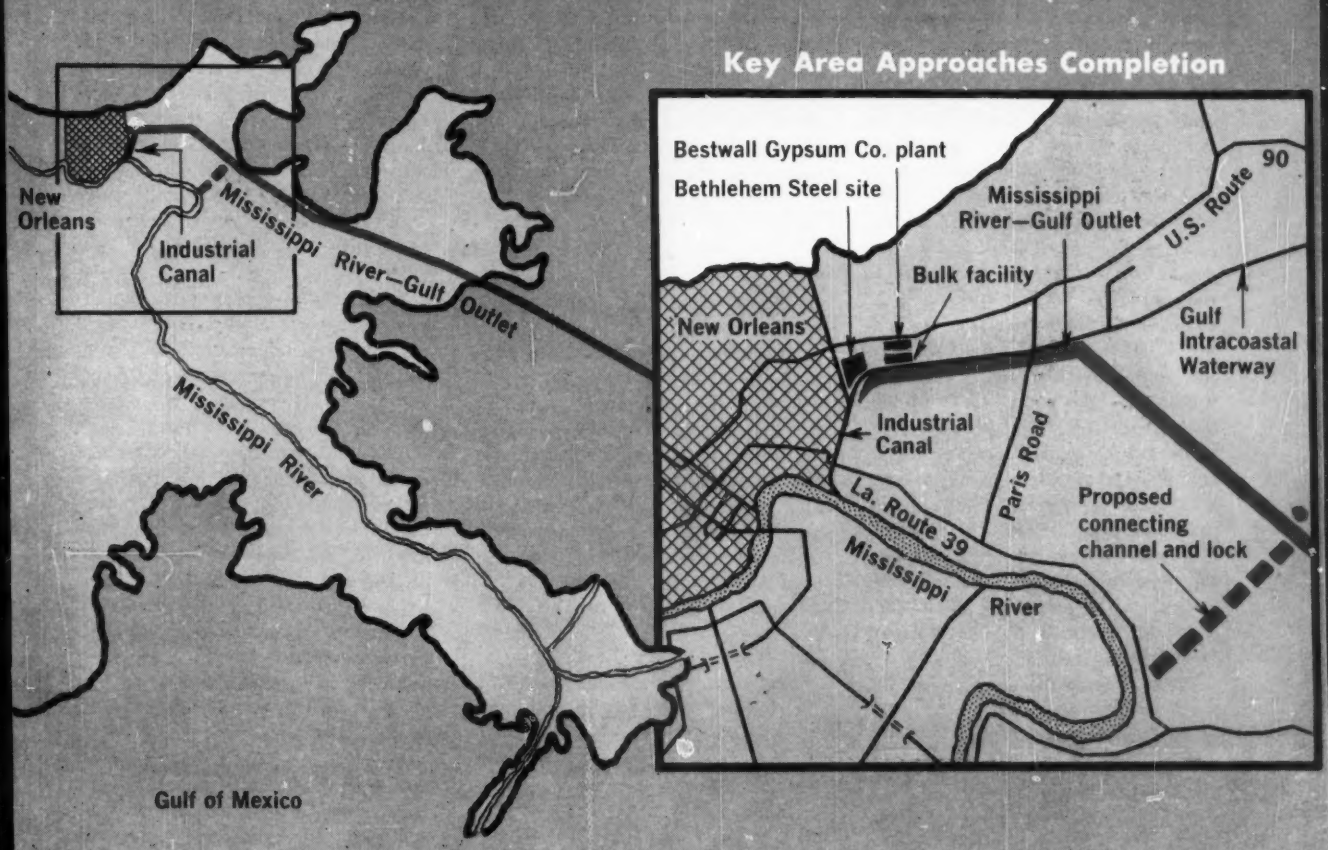
Quigley's engineers are based in the repair shop, assigned in the field as needed. Also under Quigley's supervision are two general foremen, nine area foremen, one shop foreman and 83 instrument mechanics. (The number of mechanics is low for a plant the size of the Chambers Works because it has mainly older batch units rather than new continuous units).

One year after the new organizational setup went into operation, work was begun on the new repair shop so that instruments that couldn't be repaired in the field or at the area shops could still be completely overhauled at the plant.

In this group are the plant's 15% of instruments now on a preventive maintenance schedule. In the planning stage: computer scheduling that will permit all instruments to be put on preventive maintenance.

Unfinished areas in the shop: electronics, which has twice outgrown its allotted space, and stores area. The stores problem: about 5,500 items valued at $45,000, are in the spare parts account; turnover is about $18,000/month; complete instrument spares are valued at $65,000, with a $15,000/month turnover.

New Orleans Waterways Growth Hastens Industrial Expansion



Making New Growth Room Along Old 'Miss'

Plans that could foster a new industrial area with deepwater port facilities near New Orleans may be completed in the next few weeks. The new area will lie along the soon-to-be selected channel connecting the Mississippi River and the new Mississippi River-Gulf Outlet. And the new land will be welcomed by the CPI, which has crowded in 50 plants along the Mississippi to Baton Rouge, put 18 plants around New Orleans alone.

Decision on precisely where to put the connecting channel is expected shortly by officers of the New Orleans Dock Board. It's a significant step toward completion of an overall waterways development scheme for the Cresent City area, the major purpose of which is to provide a shorter, safer water route to the Gulf, but which will also open up miles of site land to industrial development. The new channel, south and east of the city, will give New Orleans a second route from the Mississippi to the outlet—the other being the industrial canal, roughly parallel, about 12 miles further north.

Construction of the 76-mile, $101-million Gulf Outlet — which slashes almost straight southwest from New Orleans, knocks 50 miles off the city's route to the sea—is already under way; the first five miles are completed to contract dimensions. Construction of port and terminal facilities (also acquisition of rights of way), job of the dock board, has also begun. And already the board is doing business with the water- and land-hungry CPI.

CPI Interest: First CPI firm to take advantage of this inland deepwater port and industrial area is Bestwall Gypsum Co. (Ardmore, Pa.). Bestwall's new, $5-million gypsum board plant, due for completion in July '60 is located on a 28-acre tract bought from the Louisville & Nashville Railroad for $1,000/acre.

Next to Bestwall, and on the outlet, the dock board is preparing to construct a $1.5-million bulk-handling facility to serve area industry; plans now call for an additional $4.5-million expansion of the facility. Contracts have been let for the construction of loading equipment, and others are ready to be let for riverside dockage and conveyors to accommodate Bestwall.

Site Pros and Cons: New Orleans'

needs for both the short sea route and additional industrial space are plain. The outlet eliminates navigational hazards inherent in the Mississippi, which is marked by numerous bends, dangerous high-tide flotsam and jetsam, and river-mouth fog conditions. Water-front New Orleans has reached optimum development and few riverbank locations, accessible to rail and highway, exist now.

From the industrial canal to the connecting channel — 12.5 miles to the south — 10,730 acres will be available for industrial sites, including 1,000 acres along both sides of the connecting channel. Filled area south of the completed five-mile stretch of outlet totals 3,000 acres, while a 2,000-acre area north of the completed section is already provided with levee protection and is subject to reclamation. It's accessible to L&N's main line, the existing highway system to and from the city, and will be served by the Public Belt Railroad, operated by the Port of New Orleans.

Present Status: Specifications of the outlet call for a minimum depth of 36 ft. and width of 500 ft. on the bottom, over about 50 miles of the inland portion. The actual rate of construction of the outlet depends on year-to-year Congressional appropriations, but, with the section from the city to Paris Road (*see map*) completed, the project is far removed from the blue-sky stage. The U.S. Army Corps of Engineers, supervising the construction, expects to have a usable (one-way) outlet 36 ft. deep, 250 ft. wide, completed by June '63, with full width finished by '67.

Although site of the new channel's lock and canal is undetermined, the board says a completion date of '70 is expected. "Some vessels will choose to use the connecting channel and larger lock because of their deeper draft," according to Col. William Lewis, planning coordinator for the dock board. The lock will be 40 ft. deep, as opposed to the 31.5-ft. depth of the existing industrial canal. This will allow plants on the proposed link to use either the shorter outlet route or the deeper-dredged Mississippi River (which has 40-ft. channels). Some oil companies, for example, will likely stick to the broader, deeper Mississippi for their tankers, for safety reasons.

The dock board estimates land value at $3,000/acre in the area adjacent to the industrial canal. Present value of land below Paris Road ranges around $750/acre but will likely increase to $3,000-4,000/acre when the outlet is completed and facilities installed. Lands in the lower reaches of the outlet, near the Gulf, now are valued at $50-100/acre, according to the dock board.

Two natural gas pipelines cross the outlet route, and natural gas and oil are abundant in Plaquemines Parish southwest of the channel.

Drawbacks: Much of the land along the outlet route is swampy, consisting of organic material, some 18 ft. deep on top of stiff blue clay. Industrial sites along the outlet may have to be filled with spoil; consolidation might take up to two years before the land can be used. Docking facilities usually are made by digging inlets off the channel.

LEGAL

Trademark Suits: Three trademark infringement suits are in the news this week, one involving a hair treatment compound, and two involving drugs.

In the hair treatment suit, a New York federal judge has denied a motion by Gillette Co. seeking an injunction against Ed Pinaud, Inc., to stop using the name Tonicream on a hairspray. Gillette makes and markets a number of products under the Toni name; one is a hairspray called Adorn by Toni. Gillette claims Pinaud's use of the name is confusing and deceiving; Pinaud denies this, claims in a countersuit that it has priority over Gillette in the use of the name. In refusing to grant a preliminary injunction, the court said the same aim could be accomplished by bringing matters to an early trial.

In the drug cases, Commerce Drug Co., Inc., claims that Bryant Pharmaceutical Co. is infringing its Ora Jel trademark—with a similar compound named Oradent Jel. Ora Jel is a compound for relief of teething pain in infants. In another suit, Grove Laboratories, Inc., charges that No Nap Co. is infringing its trademarks, No Doz and Nonod. All are sleep-inhibiting drugs. Grove is seeking a permanent restraining order and triple damages from No Nap.

LABOR

Hercules Vote: Employees of Hercules Powder Co.'s Rocky Hills, N. J. plastics fabricating plant, voted four to one to be represented by International Chemical Workers Union. Results: 139 votes for ICWU, 25 for no union, nine for Oil, Chemical & Atomic Workers. ICWU will represent production and maintenance employees.

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Feedback: Organizers of International Chemical Workers Union have organized themselves into an independent union—International Chemical Workers Representatives Assn.—and have signed a contract with ICWU. Although such an occurrence is not uncommon with office employees of unions, the ICWU situation differs from the usual in that most of the organizers are already members of ICWU and are qualified to serve as delegates to the union's convention, thus sharing their employer's responsibilities.

Their negotiated contract runs along normal contract lines, provides at the outset for a pay raise of $15/-week.

ICWU President Walter Mitchell's comment: "We recognize we are venturing into a largely uncharted area . . . the employer-employee relationship is close and complex."

KEY CHANGES

Thomas C. Jones to president, **Joseph A. Holmes** to vice-chairman, board of directors, Nalco Chemical Co. (Chicago).

E. H. Adkins, Jr., to president, **Gerard Pendergast, Jr.,** to executive vice-president, American Chemical Co. (Miami).

R. J. DeLargey to vice-president, administration, International Minerals & Chemical Corp. (Chicago).

Albert H. Clem to vice-president, marketing, Pennsalt Chemicals Corp. (Philadelphia).

Robert C. Harnden to executive vice-president, Chapman Chemical Co. (Memphis).

L. Byron Cherry to general manager, Ozalid Division, General Aniline & Film Corp. (New York).

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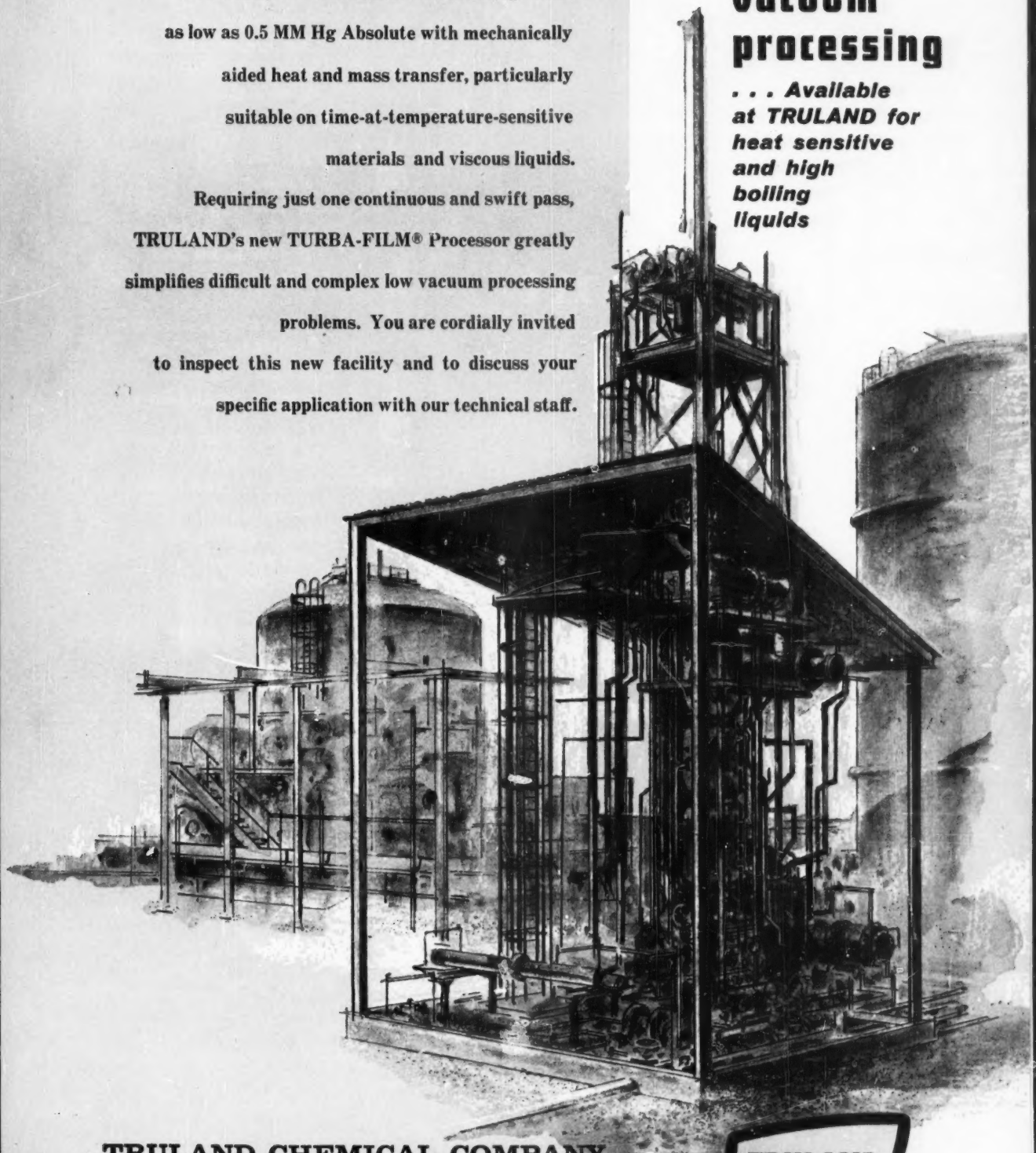

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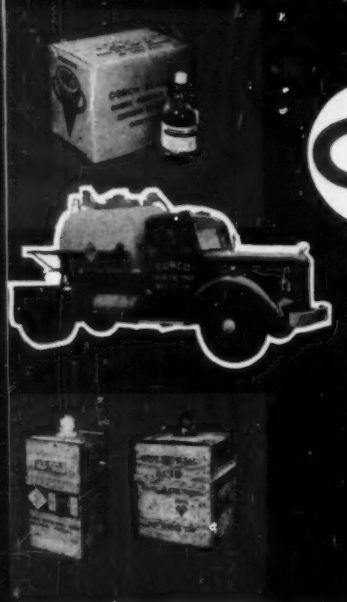

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Send for further information

Nalco: Running Fast on a New Track

Nalco Chemical Co., Chicago-based chemical specialties maker, is closing the book on by far the greatest sales-and-earnings record of any year in the company's 32-year history.* The '59 sales will probably reach the $45-million mark, about 30% ahead of the '58 showing, reports Nalco Vice-Chairman Joseph Holmes. Net profits, he adds, will likely be near $4 million—also a record.

The sharp upward slope of the sales-and-profits curve for Nalco is clear confirmation that the company's new stress on marketing is paying off. During the '54-'57 period, Nalco had been concentrating on capital expansion and foreign subsidiaries.

With a solid base to build on, its capital expansion of major nature will probably not begin again for several years. In the booming years of the early '60s, Nalco will concentrate on marketing. Toward that end, it has just moved a marketing man into the president slot. Thomas Jones, Chicago district manager for Aluminum Corp. of America (ALCOA) has taken over the reins from Holmes, who has been president of the company since '56.

Already, a 10% expansion in Nalco's 250-man sales force is planned.

Since the company was set up in '28, when Chicago Chemical Co. and Aluminate Sales Corp. merged to form National Aluminate Corp., the firm has had many significant turning points. But by far the most important, believes Holmes, was the '46-'48 period. Until then, Nalco specialized in water-treatment chemicals for steam locomotives. About 65% of its sales went to that market. Then, railroads began the big switch to diesel tractive power.

More than anything else, Holmes credits the switch with awakening Nalco to the need for diversification. "Some day," he adds, "we'll get around to erecting a statue of the steam locomotive on our front lawn."

Fortunately, Nalco was already beginning to probe deeper into petroleum

*Nalco's best previous year was '56. That year, after-tax earnings were $3.5 million on total sales of $36.3 million.

PACING NALCO'S GROWTH

YEAR	EVENT	SIGNIFICANCE
1928	National Aluminate Corp. formed through merger of Chicago Chemical Co. and Aluminate Sales Corp.	Pooled resources and complementary markets. CCC had stressed boiler feed chemicals; ASC had concentrated on rail locomotive water treatment.
1929	Visco Products Co. (Houston) acquired as subsidiary.	Entry to oil industry with crude oil emulsion breakers.
1930	Acquired Paige-Jones Chemical Co.	Nalco gained right to fabricate water-treatment chemicals in ball briquette form.
1934-37	Developed microbiological chemicals for slime control.	Opened major markets in paper industry and production systems using cooling towers.
1935	Started manufacture of synthetic zeolites.	Launched firm into ion exchange, broadening scope of water-treatment business.
1937	Established Aluminate Chemicals, Ltd. (later renamed Alchem Ltd.) in Canada.	Beginning of foreign operations; sale of Nalco chemicals on Canadian market.
1940	Developed commercial process for colloidal silica.	Created basic new specialties formulation ingredient.
1942	Entered production of petroleum cracking catalysts at government's request.	Entry into new product activity, broadening of sales to oil industry.
1944	Developed widely used liquid antifoam for paper mills.	Expanded scope of sales and service to paper industry.
1946-48	Railroads started switch from steam to diesel power.	Produced need for diversification; firm launches weed- and brush-control chemicals, spraying services for railroads.
1949	Introduced new line of corrosion inhibitors—still widely used.	Boosted volume of business with refineries, primary oil-producing projects.
1952	Established Nalco Italiana (Rome, Italy).	First Nalco production facility abroad.
1956	Started production of amines, amine derivatives and organic intermediates.	New sales area—industrial process chemicals.
1958	Acquired Howe-Baker Engineers.	Extended marketing area to design of equipment for electrical desalting and desulfurization of petroleum.
	Acquired Oil Products & Chemicals Co.	Diversification into manufacture of rolling oils and metal-working lubricants.
	Acquired Flox Co. (Minneapolis), a Nalco distributor.	Expansion of marketing into Pacific Northwest, Hawaii, Alaska.
1959	Name changed to Nalco Chemical Co., adoption of marketing concept.	Better sales advantage of customer familiarity with "Nalco" name.
	Introduced high-concentration (50%) colloidal silica.	Extended some advantages lost when patents on old process expired.

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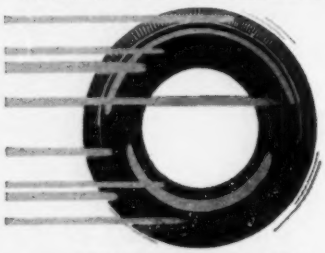

MILLION DOLLAR IDEAS

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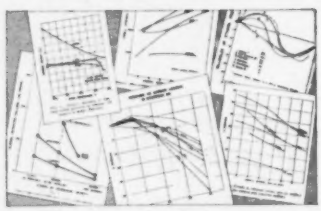

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industry markets for corrosion control. Liaison with oil companies already existed: Nalco's Visco Products Co. had been marketing crude oil emulsion-breakers since '29. And during the war, Nalco had started production of petroleum cracking catalysts. Because they were already buying cooling-water and boiler-feed treatments from Nalco, oil firms naturally turned to it for help with petroleum-product corrosion problems.

Encouraged by needs of the rapidly expanding oil industry, Nalco diversified rapidly. During the '46-'52 period, the company launched products for refinery stream processing, downhole corrosion treatment, soot remover combustion catalysts, and fuel oil stabilizers. Moreover, the same period saw the beginning of Nalco's overseas operation, with establishment of Nalco Italiana, S.p.A. (Italian railroads were still using many steam locomotives).

At the same time, important products were developed to combat scale and quell foam problems. The war-born catalyst operation assumed divisional status.

Perhaps as significant as the diversification, says Holmes, was the intensive research conducted at the same time. It helped pave the way toward a 200% sales increase. Since '55, for example, Nalco has launched 60 or so major products and its total line numbers 300 different materials.

In '41, Nalco won an important early patent (No. 2,244,325) on manufacture of colloidal silica. Because of its small size, Nalco was unable to capitalize directly on the invention, and licensed Du Pont to market silica sols to all industries except those of water treatment and ceramics.

In the ensuing years, important use patents were issued to a number of companies that opened important, volume markets in waxes, antiskid paper processing, blueprint paper and textile processing. While markets for ceramics applications proved out, Nalco was never able to sell much silica sol for water treatment.

Since its patent and the concomitant Du Pont license expired last year, Nalco has been actively promoting silica sols. With its new 50% solids product, it figures to gain a competitive edge over marketers of lower-concentration materials. New Nalcoag 1050 permits use of smaller shipping containers for the same quantity of active ingredient, affords sizable storage and freight rate savings.

Breadwinner Lineup: In Nalco's product mix, boiler-feed water-treatment chemicals represent the biggest market. Sales standout: sodium aluminate. Refinery stream anticorrosion chemicals are next important, especially Nalco 161, a filming amine inhibitor. Nalco's third most important market is the slimicide field. Here, says the firm, the quaternaries and chlorophenates are the biggest sales boosters. The fourth major field is cooling tower stabilization chemicals.

The industrial division is the biggest of the company divisions. Its estimated sales: $20 million.

Sales of other company divisions, says Holmes, share equally in the remaining volume. The divisions include: Catalyst, Ion Exchange, Oil Products, Transportation, Overseas. Domestic subsidiaries are Visco Products Co. and Howe-Baker Engineers, Inc. Five foreign subsidiaries in the corporate structure: Nalco, Ltd., Nalco Italiana, Deutsche Nalco-Chemie (West Germany), Nalco Espanola, and Nalco de Venezuela.

Employee Incentive: Looking beyond its diversification and service-minded sales policies, Holmes credits the Nalco staff with a key role in building the firm's reputation. An unusually liberal employee benefit program has been instrumental in assembling the Nalco team. The firm pays a cash bonus that has amounted to 10-17% of the annual base pay over the 20 years the plan has existed. A profit-sharing stock plan adds 5-8% to annual salaries each year. Fringe benefits, taken collectively, usually average 30% of annual salary costs.

Currently, Nalco's 900 employees hold about 40,000 shares. The biggest single stockholder, the Alcoa Foundation, owns 25% of Nalco's common stock. The remainder is widely spread among investment trusts, institutions and private shareholders.

Looking Ahead: Chances are that in a few years Nalco will move into a few textile chemical specialty markets. And development efforts on its chemical intermediates program will be strengthened. These, company officials hope, should help push Nalco to the $100-million sales mark by '70.

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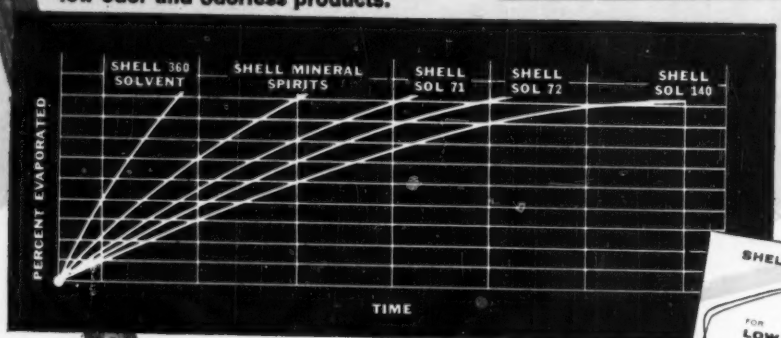

Typical properties of these Shell Solvents are contained in booklet shown. It will be mailed on request.

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SHELL

Technology Newsletter

CHEMICAL WEEK
December 26, 1959

Sign of private interest in nuclear fuel reprocessing: W. R. Grace & Co. this week disclosed that its Davison Chemical Division and five electric utilities have formed an industrial reprocessing group (IRG) to study feasibility of design, construction and operation of a privately financed reprocessing facility.

The utilities banded in IRG—Commonwealth Edison Co. (Chicago), Consolidated Edison Co. (New York), Detroit Edison Co. (Detroit), Northern States Power Co. (Minneapolis) and Yankee Atomic Electric Co. (Boston)—run five of the six privately financed nuclear power plants in the U. S. Speaking for the group, James Fairman, senior vice-president of New York's Con Ed, pegged the project as a "logical and necessary step in determining over-all economics."

The Atomic Energy Commission last week approved IRG's proposals, which include requests for information on AEC's fuel reprocessing operations and development programs. Davison will determine if the plans are feasible; all six IRG members will share costs—an estimated $250,000 over a six-month period. If the outlook is favorable, Davison would consider financing a commercial plant on its own to reprocess fuel from IRG reactors and from some nonmember sources.

Though details of the proposed study have not been revealed, it's believed that Davison will stick with an aqueous processing method. Best bet: the Purex process. Studies will be limited to recovery of uranium and plutonium. Fission-product recovery and radioactive waste disposal are not being contemplated for the commercial plant.

•

Research funds for stream improvement and use of sulfite pulping by-products got the green light in Chicago last week. Top executives of major pulp and paper companies boosted '60 budgets for the sulfite pulp manufacturers' research league 6.4% to $163,500.

More progress in sulfite liquor processing and utilization was made in '59 than in the past several years, said Stanton Mead, league president.

"Now, U. S. pulp mills producing 20% of the sulfite pulp are equipped for spent-liquor utilization," Mead disclosed. "The '60 treatment capacity will rise to 25% or more. In Wisconsin, the figure for league member mills is approaching 50%. We still have a long way to go, but our research program is making substantial strides."

•

Two new painkillers are making their commercial debut. Analexin (phenyramidol hydrochloride), developed by Irwin, Neisler & Co. (Decatur, Ill.), is both a nonnarcotic analgesic and a muscle relaxant, reportedly the first such drug of its kind. Palfium (dextromoramide tartrate), under development and clinical evaluation by The G. F. Harvey Co. (New

York), is said to "dramatically" stop cancer pain, features quicker action, higher potency than morphine.

•

A new antibiotic, cephalosporin C, that's said to be more effective than penicillin is being studied under sponsorship of Britain's National Research Development Corp., the government body sponsoring the development of scientific and engineering discoveries. Glaxo Laboratories Ltd. is investigating commercial production methods for NRDC. Current research on the drug is under way at Oxford University by a team headed by Sir Howard Florey, joint discoverer of penicillin with Sir Alexander Fleming. Distillers Co. Ltd. is also interested, has approached NRDC, and is looking at ways to make it commercially. However, cephalosporin C awaits full-scale clinical trials, and neither company will yet give details of its work.

•

Patents for platinized titanium electrodes for electrolytic cells may be more difficult to obtain than Imperial Chemical Industries had planned (*CW, Dec. 12, p. 67*). Ionics, Inc. (Cambridge, Mass.) revealed its patent position to CHEMICAL WEEK this week.

Says Walter Juda, executive vice-president and technical director of Ionics: "The patent situation on applications of noble metal-coated anodes is strictly up to the patent office, has not been clarified to date; and when and if patents are issued, Ionics hopes and expects to receive them.

"We have made noble metal-coated anodes on 'valve' metals (metals such as titanium, tantalum and niobium, which form a protective oxide in electrochemical applications) for experimental purposes since '53. We have used these anodes in experimental cells, including caustic-chlorine cells, electrodialysis cells [and for] cathodic protection and uranium hexafluoride reduction. Since '54, these anodes have been used in commercial Ionics equipment. We are now offering various noble metal electrodes to caustic-chlorine producers and others."

ICI, which has had plant-scale tests on electrodes in chlorine cells under way for about nine months, also hopes to get "use" patents. Just when ICI began experimental work hasn't been revealed.

•

A new process for extraction of pure technetium from waste fission product solutions is claimed by the United Kingdom Atomic Energy Authority. Initial separation is by ion-exchange resin from which the element is removed with strong nitric acid and then concentrated by evaporation. It is further purified and concentrated by extraction with methyl ethyl ketone solvent, which is subsequently removed by evaporation.

Chemists at the UKAEA's Windscale Works have obtained 20 grams of pure technetium, so far, by processing over 100 long tons of waste.

Looking up from bedrock to mouth of production shaft at Cleveland mine. Photograph by Loebel.

Modern methods will make new salt mine country's most productive

More than a quarter mile beneath Cleveland's lake front, drillers are rushing to complete the twin shafts of International Salt Company's new $10,000,000 mine. From these shafts, the mine will extend out almost two miles under the bed of Lake Erie . . . into deposits containing an estimated 150 million tons of high-quality rock salt.

To bring this salt to users in the shortest possible time, International plans to install fully automatic mining equipment. The mine itself is specially designed to house all crushing and screening operations. Thus, rock salt will come out of the ground processed and ready for direct loading into cars, trucks and the latest bulk or self-unloading lake freighters.

When the Cleveland mine (scheduled to open in mid-1960) reaches full operation—shipping capacity is expected to be over 1,250 tons per hour. International will be able to serve industry more efficiently throughout the entire Great Lakes area and beyond. State and local governments will also benefit from this convenient new source of rock salt for winter ice control.

If you would like the finest technical advice or engineering help with any salt-using problem, simply contact International Salt Co., Inc., Scranton, Pa., or any of the offices listed below.

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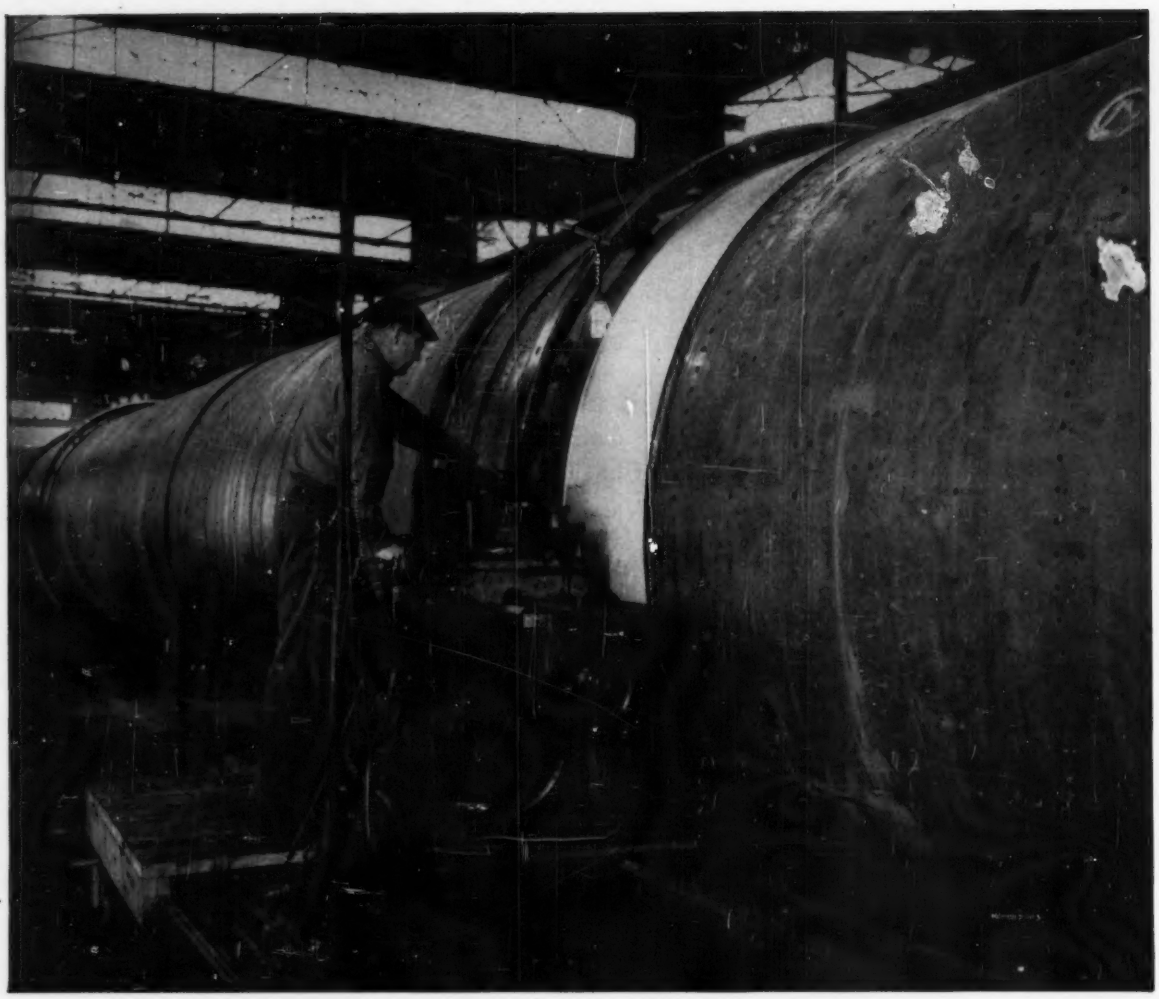

Louisville Dryer—10 feet in diameter, 10 stories long!

Turn a ten story building on its side, and there'd be room to spare on either end of this huge pit lathe at Sharon, Pennsylvania where this 10′ x 110′ Louisville Dryer was fabricated.

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Road Time — Big Factor in Chemical Selling

Industry	*Miles/year by salesmen*	*Average mileage payments to salesmen*
Industrial chemicals	19,000	$0.0913
Drugs and pharmaceuticals	19,000	0.0887
Cosmetics	23,000	0.0887
Fertilizers and farm chemicals	38,000	0.0876
Paints	23,000	0.0876
Ceramics and glassware	24,000	0.0891
Plastics	20,000	0.0897
Petroleum	22,000	0.0891
Total	188,000	
Average	23,500	0.0889
All industry	740,300*	0.0891

*Estimated. Source: Wheels, Inc.

Route to Lower Road Costs?

Costs of keeping chemical process industries salesmen on the road are steadily mounting. They've already topped 9¢/mile for chemical salesmen, 8.9¢/mile for all CPI salesmen (see table). Last week, faced with these figures, and eager to time their moves to coincide with the early months of the '60 automobile year, CPI sales executives were weighing the pros and cons of auto-fleet leasing.

The problem is complex. There's no exact answer, but a CHEMICAL WEEK survey reveals a trend toward fleet leasing, turns up these significant conclusions:

• There's been a net gain of 100 national and regional fleet-leasing concerns during the preceding five years.

• Approximately 25% (250,000) of the autos used in industry are leased—another 230,000 belong to company-owned fleets, 440,000 are salesmen owned. There were 140,000 leased cars in industrial fleets in '54, will likely be 287,500 in '60.

• Every year, 1 million cars are sold to all fleets—145,000 of these to leasing and rental firms, 105,000 to private and company fleets.

• The less-than-10,000 large fleet users (such as large CPI concerns) represent 11-12% of all fleet users, use 50% of all fleet cars.

• CPI companies (not including glass or rubber firms) lease 63,000 autos, about 25% of all cars leased by industry. Next year, the figure will top 70,000.

• Chemical companies alone lease 13,500 cars, use 9,000 company-owned cars, 9,800 salesmen-owned (*see table, next page*).

Why Fleet Leasing? Two principal reasons are usually cited for firms' leasing fleets for use by salesmen: (1) leasing does not tie up large chunks of working capital; (2) it eliminates most of the headaches of supervision, operation, maintenance and resale of autos inherent in the use of company-owned fleets.

Leased-fleet advocates claim also that this operation is cheaper and more efficient than any other form of salesmen's transportation. On this broad point, however, they get some argument. Firms either using company-owned fleets, permitting salesmen to drive their own cars on an allowance basis, or using a combination of several plans, usually argue that there is a point—in terms of mileage and number of autos used—at which it is more economical not to lease.

Strong Case: Leasing firms such as Wheels, Inc. (Chicago)—and also independent research organizations such as The Foundation for Management Research—build a strong case for fleet leasing for salesmen.

In the face of plain economics, their case has merit. The actual costs of purchasing a company fleet, it is claimed, can be determined by examining the rate of profit that can be earned on working capital (in the chemical industry, the average before-tax net profit on net working capital is 45%). For example, the "cost" to a chemical company of purchasing a fleet would average 45% of the amount invested each year in automobiles. On a $100,000 fleet, the cost would be $45,000 the first year (equivalent to the amount of net profit before taxes the chemical maker might have made if he had not tied up $100,000 of working capital. In the second year, cost is slightly less, due to depreciation.

According to A. J. Schoen, president of Wheels, "If you compare earnings of two chemical companies of the same size and sales volume—one company using a leased fleet of 100 cars, the other using a company-owned fleet of the same number—the first company would be about $100,000 ahead at the end of two years. This represents cumulative, after-tax earnings on working capital equivalent to cost of the company-owned fleet."

CPI Views: Although CPI concerns use far more leased autos than

How spray-dried phosphates give your detergents 30% more bulk at the same cost...and the same weight

The secret's in the hollow centers. When sodium phosphates are spray-dried, each granule has an air bubble in its middle. This makes them 70% bulkier than conventional phosphates.

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Free-Flowing. Because of their high air content, spray-dried phosphates are always loose.

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Box Score—CPI Fleet Leasing

Industry	*No. cars leased*
Industrial chemicals	13,500
Drugs and pharmaceuticals	18,500
Cosmetics	5,000
Fertilizers, farm chemicals	5,000
Paints	8,000
Ceramics and glassware	3,000
Plastics	2,500
Petroleum	7,500
Total	63,000
Total all industry	250,000

does any other single industry, they've also adopted other plans, or a combination of several plans.

Bob Rohrberg, staff assistant to the sales vice-president of Air Reduction Co., told CHEMICAL WEEK that his company uses two automobile plans. "Until two years ago, all of our automobiles used by salesmen were employee owned. Now we offer the salesman an option—he can use his own car or one of those we lease."

Air Reduction uses about 400 cars in all its divisions, leases more than 300 of these. If a salesman decides to use a leased car (the company gets its cars from Lee Fleet, Inc. of Chicago), he probably gets one of the so-called "low-priced" cars. (Chevrolet sells about 50% of the cars that go into leased fleets; Ford, 30%; Plymouth, less than 10%. Cadillac is in fourth place, while Rambler is fifth and gaining.)

If the Air Reduction salesman decides to use his own car, his allowance is based on the cost of using a popularly priced car, considering such factors as his sales territory, miles driven, etc.

Rohrberg sees numerous advantages in the leased fleet for both salesman and company. The salesman has a new car at least every 18 months; he doesn't have to put out a lot of money for a car; he can be a "two-car family." The company is relieved of much paper work, doesn't have capital tied up in autos.

Air Reduction offers an option, because of the fairly recent changeover to leased cars. On the basis of the success of the leasing arrangement so far—and Rohrberg admits it's too early to know for sure—the company probably will switch entirely to use of leased cars.

Catalin Corp. of America and Commercial Solvents are typical of the many CPI concerns that have two plans, based on the number of miles a salesman drives.

At Catalin, the salesman gets a leased car if he drives over 25,000 miles/year. The company leases over 30 cars each year, annually exchanges its cars for new ones.

The salesman who drives under 25,000 miles/year uses his own car, gets an allowance of 10¢/mile for the first 7,500 miles, 8¢/mile for the next 7,500, 6¢/mile for 5,000, 4¢/mile for 5,000 miles.

Commercial Solvents leases most of the cars driven by its salesmen, but offers an option. The salesman driving under 10,000 miles/year uses his own car, gets an allowance of 9¢/mile. Over 10,000 miles/year, he has a choice. Should he elect to use a leased car, he can pick both color and extras, including air conditioning in warm climates. The company leases about 70 cars each year.

When Leasing Doesn't Pay: It's generally agreed that fleet leasing doesn't pay under some conditions: (1) when the company has more short- and long-term capital than it can profitably use in its direct business operations; (2) when the company pays its salesmen by commission only, without an auto allowance; and (3) when the salesmen average 1,000 miles or less each month, driving primarily in cities, but only if the mileage allowance is under 10¢/mile.

Point three usually can be cited as the reason why some CPI firms have two plans for salesmen's travel, permit salesmen driving less than a certain number of miles/year to use their own cars on an allowance basis.

Salesmen-owned cars do save company investment capital—when compared with company-owned fleets—but such a plan must be considered in the light of the number of miles driven and company mileage payments.

For example, when a company allows its salesmen 7¢/mile, a salesman-owned car driven over 23,000 miles/year is more expensive to operate than is a leased car. At 8¢/mile, driving a car, over 18,000 miles/year is uneconomical, compared with leasing a car. At 9¢/mile, roughly the CPI average allowance, anything over 17,000 miles in the salesman's own car is more expensive than the cost of leasing a car.

And, there are a number of intangible drawbacks allegedly attached to the use of salesmen-owned cars. For example, leasing experts say, no matter how generous the mileage payments, the salesman tends to look upon them as regular income rather than as the cost of operating his car. He often doesn't consider that he must lay aside some part of those payments as depreciation costs.

It is also pointed out that while some companies claim that company-owned fleets are cheaper than leased fleets, the company usually fails to consider, or underestimates, the costs of administering its fleet.

Hamilton Large, American Cyanamid's general traffic manager, told

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CHEMICAL WEEK that his company preferred fleet leasing for several reasons. Primary one: leasing makes certain each salesman has a new car at least every two years. "This is good both for customer relations and for salesmen's morale."

In addition, Large listed the lack of large capital tie-ups and the relative freedom from administrative worries as factors favoring leasing over company-owned fleets.

Types of Leasing: There are two types of fleet leasing—the finance (equipment-trust) lease, and the maintenance (fixed-cost) lease.

Under a finance lease, a leasing company furnishes a manufacturer with an auto fleet at low fleet prices, delivers the cars to the salesmen in their home territories, sells the fleet at the end of the lease period. For these services, the company pays a monthly fee, plus an amount (2% of the original cost of the equipment) to cover depreciation. The fleet user pays all maintenance costs and insurance. In general, companies prefer this form of leasing, are showing a marked tendency to favor it over the maintenance lease.

Under a maintenance lease—preferred by CPI concerns—the leasing company provides the above services and takes over all operating expenses, except daily gas and oil costs. For this package, the fleet user pays a fixed monthly fee covering everything. This gives the user a fixed monthly expense he can budget.

According to Wilbur Webster, Jr., vice-president of Peterson, Howell & Heather, Baltimore auto leasing firm, "It's been our experience—and we've proved it time and time again—that the maintenance-type of lease is much more expensive than the finance-type. This, of course, presupposes that the finance lease is accompanied by an all-inclusive fleet-management program such as that offered by PHH."

Webster points out that under the maintenance-type lease a company pays the lessor to assume all its risks. "Under such circumstances, it's only natural for the lessor to include a substantial provision for contingencies over his normal margin of profit."

It's generally agreed that the finance-type lease conserves a company's working capital, enables it to take advantage of any lower operating costs that might be peculiar to its fleet operation under its own fleet management, or in conjunction with outside management provided by a firm such as PHH.

PHH notes that it will act as a company's fleet manager either with company-owned or leased cars. For company-owned fleets, PHH charges \$4/month each for up to 100 cars, \$3/month for all cars over 100. For leased fleets, the lessor provides the investment in the fleet and charges a percentage of the delivered cost of each car for management services, interest on the money invested, and an adequate reserve.

PHH claims that under its plan the cost of leasing a new car can be as low as \$49 to \$55/month.

For the Future: The trend definitely is toward fleet leasing, and toward the finance or equipment-trust type of lease. The number of company-owned fleets has been declining since the end of the last war. On the average, only 25% of all industry autos are company owned. Among CPI firms, the percentage is less. Sales management has found that leasing, under the proper circumstances, can cut sales costs, improve customer service and sales-force morale.

DATA DIGEST

• **Organic Chemicals:** New edition of 28-page booklet describes properties, applications and shipping data of more than 400 synthetic organic chemicals. Listings include alcohols, anhydrides, acids, chlorine compounds, fluorocarbons, ketones, nitrogen compounds and surfactants. Union Carbide Chemicals Co. (New York).

• **Product Index:** New edition of product index lists company's products alphabetically and by class. Among them: phenol and substituted phenols, fused-ring heterocycles, pyridine and its derivatives, and hydrocarbons. Reilly Tar & Chemical Corp. (Indianapolis, Ind.)

• **Plasticizers:** Thirty-two-page catalog (L-104) describes company's line of plasticizers. Charts and tables define the products' properties, specifications, applications, and compatibility with various resins. Also included: description of film preparation for testing, test methods for film evaluation, guide to plasticizer selection. Eastman Chemical Products Co.

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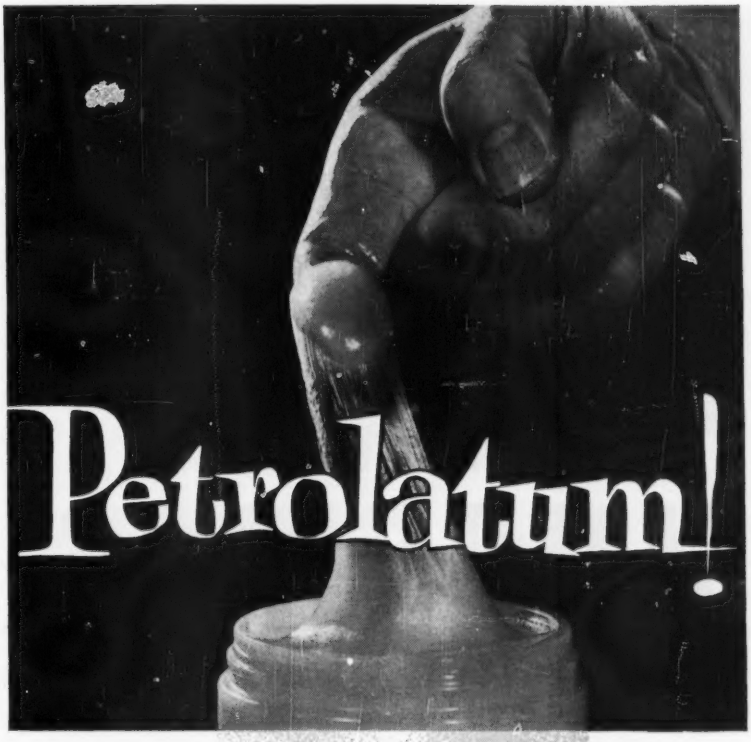

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- Potassium Titanium Fluoride
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- Sodium Fluoborate
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- Zinc Fluoride

Market Newsletter

CHEMICAL WEEK
December 26, 1959

Intra-industry polyethylene competition boiled over again late last week, resulting in another price break for consumers. The move, initiated by Union Carbide Plastics, was designed to "eliminate some spot price-cutting by other sellers."

The reductions, on low- and medium-density resins, amount to 2½¢/lb. discounts on all shipments plus additional allowances of ½¢-1¢/lb. on bulk shipments. Chances are before the week is out, Carbide's quotes will be industry-wide.

The lower tags on medium- and low-density material essentially re-establish the differentials that were practically eliminated some three months ago when high-density resin producer Phillips Chemical posted cuts (*CW Market Newsletter, Sept. 26*).

•

Polypropylene film production hit commercial status last week at AviSun's spanking new 10-million-lbs./year plant at New Castle, Del. Output at present is aimed at potential packaging customers—1-4 mils for general packaging use and 4-20-mil thicknesses for thermoforming.

AviSun is not the first U.S. commercial polypropylene film producer (Ludlow Paper of Needham Heights, Mass., for example, is among those that have been selling comparatively small quantities). But AviSun is the first resin maker to move into the packaging field.

The firm's big hope: polypropylene film as an overwrap for paper products (napkins, towels, tissues), books, catalogs, etc. Typical price tag on the new material—83¢/lb. for 1-4 mil—is about 50% higher than on polyethylene film, but the claim is that, mil for mil, polypropylene has better machinability and strength.

Polyethylene, though, has one significant edge in the scramble for packaging markets—FDA approval for direct contact with foods. Polypropylene boosters are working hard to get it too.

•

The propylene oxide-propylene glycol price cuts initiated last week by Dow Chemical became industry-wide as other producers posted comparable schedules. The reductions—all 1¢/lb.—were made, says Dow, to stimulate further use of the chemicals, which have shown only moderate growth recently *(CW, Nov. 14, p. 53)*.

New tabs on propylene oxide: tank cars, 14.5¢/lb.; carloads, 17¢; lcl., 18.5¢. Propylene glycol: technical in tanks, 12.5¢; technical in carloads, 15¢; USP in tanks, 14.5¢; USP in carloads, 18¢/lb. Dipropylene glycol: 14.25¢/lb. in tanks; tripropylene glycol: 17.5¢/lb. in tanks. Smaller reductions apply to lesser quantities.

•

Price of furfuryl alcohol is reduced 1¢/lb. to 17½¢/lb. in tank-car lots (f.o.b. Memphis, Tenn.). Quaker Oats ascribes the cut to im-

proved production techniques at its Memphis plant. The chemical is used in resins, and as a solvent and chemical intermediate.

Other quantity prices, f.o.b. Memphis (per pound): drum carloads or truckloads, 19¢; drum lcl. or ltl., 20¢. Prices f.o.b. Newark, N.J.: drum carloads or truckloads, 20.5¢; drum lcl. or ltl., 21.5¢; less than drum lots, 28.5¢/lb.

•

New collapsible lightweight aluminum alloy containers for freight shipments will be put on trial runs, starting Jan. 1, by Canadian National Railways and the Tracon Leasing Division of Thornley Engineering (Toronto). The containers—for lease—come in two sizes, 9 and 16½ cu. ft. weigh 55 and 62 lbs., respectively. When empty, they collapse to one-fifth filled size.

•

Another transport packaging innovation being tested by Canadians—in this case by Crown Zellerbach—is to float wood chips downriver in huge plastic balls.

If the balls sluice down the Frazer River satisfactorily, the method may eliminate the need to purchase 1,500 gondola-type railway cars to transport the huge volume of chips.

•

Prices of aluminum moved upward 1.3¢/lb. last week. The tab on primary aluminum (99.5%) is now 26¢/lb. Further price adjustments are under consideration for ingot and aluminum mill products, and will be posted shortly.

However, the companies say the new prices don't cover their increased costs arising from last week's settlement with the United Steelworkers. And there is good reason to believe that more price hikes will be coming in the next few months.

Meanwhile, The Aluminum Assn. reports that primary aluminum production through November was 1.79 million short tons, up 27% over the 1.41 million s.t. turned out in the same period in '58. And in third-quarter '59, there was a record output of 520,000 s.t., which included a record monthly high of 179,000 s.t. in July.

SELECTED PRICE CHANGES—WEEK ENDING DECEMBER 21, 1959

	Change	New Price
UP		
Copra, Atl., Gulf ports, c.i.f., ton	$10.00	$240.00
Corn oil, crude, tanks	0.00125	0.1175
DOWN		
Casein imp., inedible, acid-precip., grd., Argentine, bgs., cl.	$0.005	$0.205
Lead metal prime, pigs, N. Y.	0.005	0.120

All prices per pound unless quantity is quoted

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FORECAST '60

A boom year ahead.

That's the consensus of leading economists, industry executives and government forecasters—a conclusion bolstered by CHEMICAL WEEK's own task force. For three months, it has been closely studying and evaluating trends that outline the near-future economic and industrial picture.

The next 12 months will add up to a boom year.

Look for new highs in sales and production; a bounding progress in technological research and development; and an increase in after-tax earnings in '60. That goes for the U.S. economy generally, and for the chemical industry in particular.

But there are some "ifs" in this welter of optimism. A rechilling of the cold war or eruption of hot spots around the world could knock this—or any forecast—completely awry.

More-realistic uncertainties are posed by the threat of a resumed steel strike after the Jan. 26 deadline; a possible railroad strike in March; a slow-down in housing starts; still-rising imports of many low-cost foreign products; further tightening of U.S. money supply.

•

The economy is strong enough to take most of these buffetings in stride. Every important gauge will measure that strength. Gross national product (GNP) for '60 as a whole, for example, will average about $515 billion. That's about $30 billion above the peak $485 billion (seasonally adjusted annual rate) achieved in second-quarter '59 prior to the steel strike.

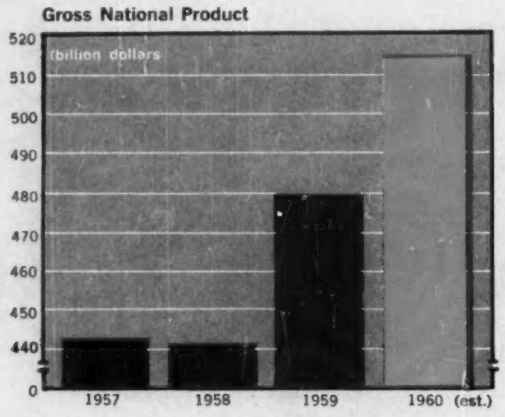
•

Here's more of the big view:

• Industrial production, hit hard by the four-month steel strike, will come close to $180 billion, an impressive 9% over the '59 level; the Federal Reserve Board Index, which measures all manufacturing, mining and utilities, should average out to a record 173, compared with 159 (revised) in '59.

• Nearly $38.5 billion will be spent by all industry on capital investment. The '59 bill was $4.5 billion less. New spending plans will depend on availability of steel and firming of construction schedules.

FORECAST '60



• Residential construction is the weakest link in the '60 economic chain. Reason: it's the most sensitive to restrictive credit measures. Expenditures for private homebuilding—even if the current credit squeeze eases—will drop about 10%, which means less than 1.2 million housing starts in the new year vs. 1.35 million in '59.

• Government spending will increase $4 billion in '60. Total dollar spending by local, state and federal governments will rise to $102.5 billion from the $98.5 billion registered in '59.

• Business inventory buildup next year—to replace depleted stocks and to meet expanding sales—will add up to about $7 billion. This means a $3-billion net increase in GNP, since the '59 figure works out to about $4 billion.

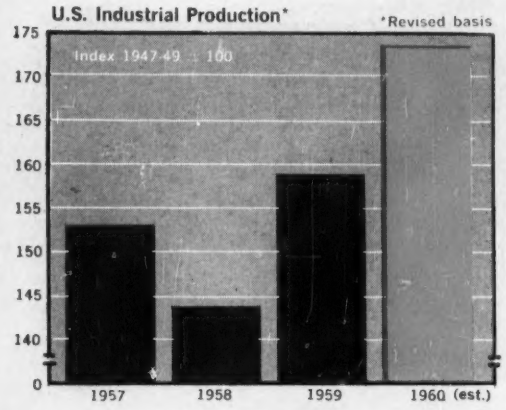
•

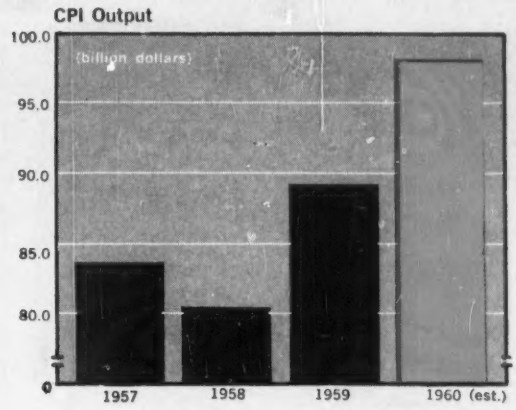
How will the CPI fare in '60? Gains are in prospect—all along the line. Dollar volume of output will continue the climb resumed in late '58. The '60 forecast: a commanding $98 billion, about 10% better than the estimated $89 billion for this year. Thus, the CPI alone will account for nearly 19% of the nation's total dollar value of goods and services in '60.

And physical output of the CPI, which in '59 ran about 12% over '58, will tack up an additional 8% gain in '60.

CPI capital spending won't hit the $4.16-billion record of '57—but it will come close at $3.9 billion, well above this year's estimated $3.2 billion. Research and development outlay, however, will shatter all previous highs. The CPI plans to spend nearly $1.3 billion on R&D, about $333 million more than its outlay in peak '57.

Sales of chemicals and allied products should top $27 billion in '60—taking into consideration higher chemical prices. The new high works out to a hefty 10% increase over '59 business. With gross income up that much, chemical companies'





profits—after taxes—should fall just short of a fat $2.3 billion.

Chemical expansions will chew up an earmarked $1.5 billion next year, roughly $265 million over '59 expenditures. Of this amount, only about $200 million will be externally financed. Bulk of the money—following a well-defined trend of the past few years—will come from internal sources: $1.1 billion from set-asides for amortization, depreciation and depletion and about $200 million from retained earnings.

But while there appears to be no industry problem over financing next year's expansion and modernization, longer-range planning may be hit hard by the relatively slow rise in depreciation write-offs compared with the rise in prices of equipment, construction and plant sites.

•

In Washington . . .

Tax cuts will have little chance of passing. The exhaustive tax study under way by the House Ways and Means Committee will be used as a reason, by Congressional leaders, for postponing decisions on trimming taxes. Further, opponents in Congress will try to sit on the Baker-Herlong bill again, as they have for two years. The bill, backed by many business groups, calls for graduated rate cuts over a five-year period.

Democrats will renew assaults on restrictive credit policies of the Federal Reserve Board—but there's no sign that the board will weaken. Result: tight money and high interest rates will continue until the current business expansion slows down.

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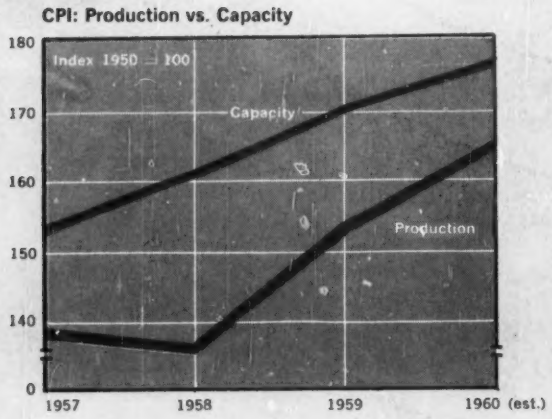
No change will be made in the fairly liberal trade policy, nor will the ban on exports of strategic materials be lifted in '60. U.S. chemical exports will total $1.5-1.55 billion/year for

FORECAST '60



the next two years, a significant improvement over last year's $1.36 billion total.

Imports in '60 will hover around the $325-million mark, maintaining a favorable five-to-one ratio with exports.

The big imponderable in the international trade picture is the outcome of the current swing toward regional markets. The European Economic Community ("Common Market") is here to stay, of course. It will make its second internal tariff cut—at least 10%—on June 30.

The treaty for the European Free Trade Assn. (EFTA) was signed last month, and it too will make an internal tariff cut (20%) next summer.

Here's what to watch for—if not next year then certainly within two to four years. Either the two blocs (EEC and EFTA) will come together in some sort of free-trade arrangement, or a split will be created that many European businessmen fear might lead to a trade war.

A split would affect U.S. chemical companies two ways: (1) exports to Europe would run into tariff barriers that would hurt more as the competitive position of European firms strengthens through integration; (2) U.S. companies would have to set up shop in both trade areas to reach the whole market.

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New minimum wages on government contracts with the chemical industries will be decided in the spring. Hearings under the Walsh-Healey Act will begin in Washington Jan. 26. Prevailing rates were set several years ago must be up-dated.

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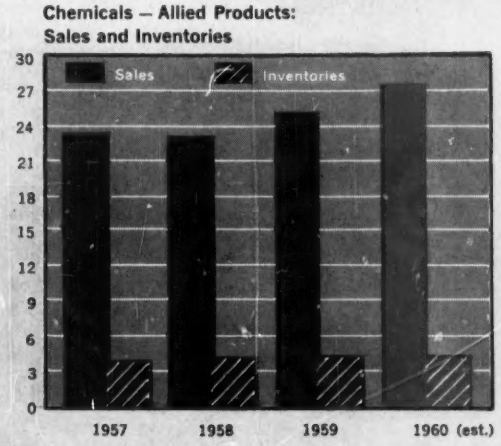
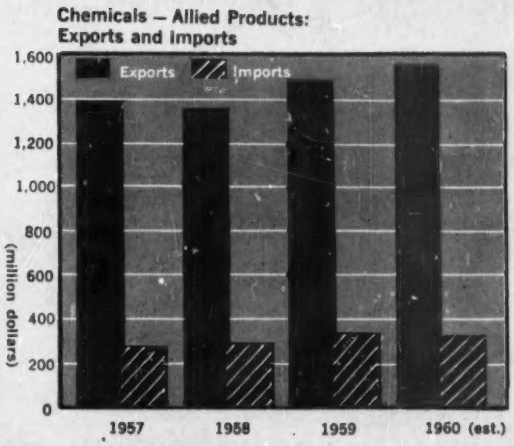
The new year will be tough for organized labor—and no snap for management. Recent curbs (e.g., the Landrum-Griffin Labor-Management Reporting and Disclosure Act) on





picketing and secondary boycotting will dull these two important union tools for recruiting new members in '60.

The new labor reform law will heat up rival union contests for representation. For instance, United Mine Workers' District 50 will undoubtedly be involved in skirmishes with AFL-CIO's two chemical unions (Oil, Chemical & Atomic Workers and the International Chemical Workers Union) for jurisdiction at chemical plants.

District 50 got the green light to move for more chemical territory when the labor law dropped the non-Communist oath condition. (UMW officials had refused to take the oath.)

There'll be no letup in management's drive to curb feather-bedding and to knock out obsolete work rules. These goals, crux of the steel dispute, will be key contract-bargaining aims as management strives to "win back" operating rights.

•

And on the management side, political programs devised in '59 will go into action during '60. There will be more activity at plant, community and regional levels. Aim is to encourage employees to get into politics. Possible bellwether of such management activity: Monsanto's new "civic affairs" unit.

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In regard to organized labor's plans for '60.

• Unions will concentrate on getting a $1.25 minimum wage, and more aid for "technologically" unemployed.

• Labor will continue to push for one particular change in Taft-Hartley. Object: to permit construction unions to strike multi-employer construction projects.

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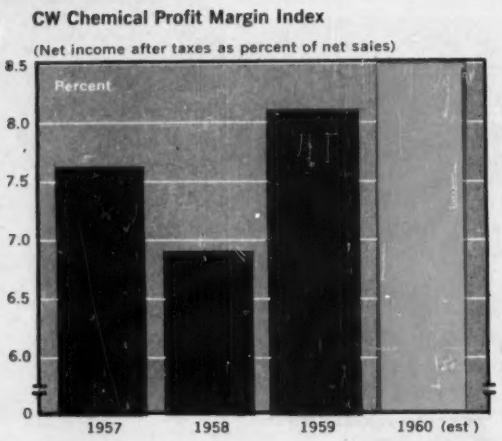
The state of chemical markets will hinge on outcome of the steel dispute. That will be the case, at least through

FORECAST '60



the early part of the new year. If a settlement isn't reached, coal chemicals such as naphthalene, phthalic anhydride, benzene and other solvents may become critically short.

At any rate, the slated Jan. 1 benzene price increase will cause hikes in phenol, styrene monomer and possibly other benzene derivatives.

Market status of mineral acids (sulfuric, hydrochloric, nitric, hydrofluoric) will also be adversely influenced if the strike resumes.

Resin producers, bothered by overcapacity this year, will have the same problem in '60. But production and sales will continue to track upward. Output of U.S. plastics and resin materials this year is expected to hit close to 5.5 billion lbs. Outlook for '60: nearly 6 billion lbs.

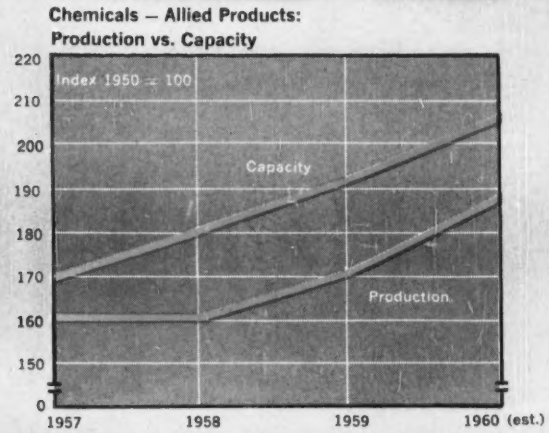
On the top rungs of the plastics sales ladder will be polyethylene, vinyls, styrene, in that order.

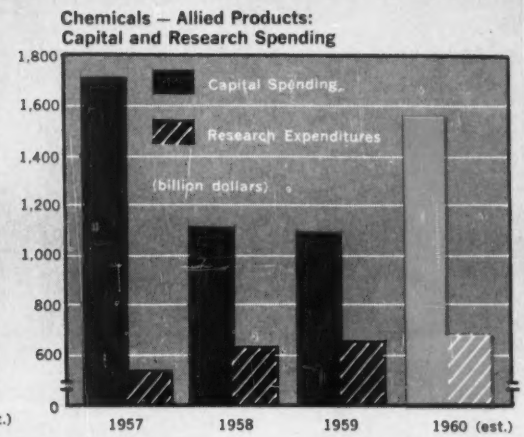
U.S. petrochemical production will climb to nearly 50 billion lbs. next year, close to 25% of the anticipated 198 billion lbs. of total chemical manufacture. Expected dollar values of petrochemicals: more than $5.5 billion.

•

"Hard sell" will be the theme of most chemical marketers in '60 because of increasing competition from imports and efforts to further widen profit margins. More salesmen will be out hustling; customer services will be broadened and publicized. And CPI firms will increasingly depend on integrated data-processing and automated order-processing to improve service, speed production—and at the same time cut the rising cost of selling.

Possibilities of a freight car shortage and a rail strike loom as headaches in chemical distribution. But the indus-





try is taking steps to minimize those problems. Under way are intensive reviews of expected car needs, and lining up of sources. Chemical companies may also try to beat the anticipated shortage of railroad-supplied cars by more rail car leasing, car hoarding, and more dependence on water shipments.

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High interest rates and tight money will oblige undercapitalized companies to rely further on their suppliers, rather than banks, for financing. As a result, CPI credit managers, plagued by delinquent customer payment habits, will shore up lending practices. They'll do it by tightening control over weak accounts, setting stringent terms, insisting on frequent operating and financial reports from backsliding customers.

Most specialties makers will have a good year—and some will set new records. Paint sellers, for example, may do a peak $2-billion business. The trend toward water-based systems will continue, with styrene-butadiene slated for a strong showing in interior applications, depending on success of a reported Dow development (a latex that can be used without casein). The swing toward acrylics and polyvinyl acetates, however, will predominate.

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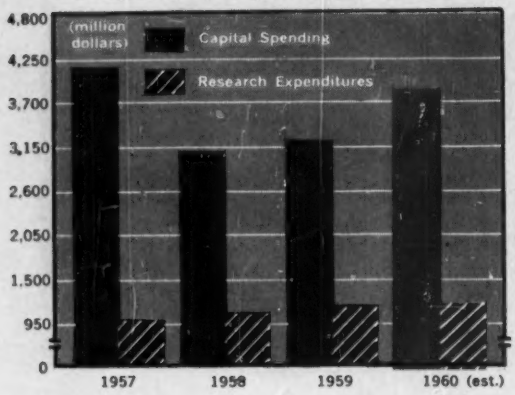
Aerosols are poised for a new surge—after a couple of years of steady, unspectacular growth. Nonfood containers may well reach 500 million units. If the long-awaited Washington okay on Du Pont's Freon C-138 comes in '60, it will trigger a host of new developments in the food field. Look for a near-doubling of this year's estimated 80 million aerosol food containers to bring the total unit output to around 750 million.

Changes in packaging will be the big thing in soaps and detergents, and the trend toward liquid detergents in automatic washers will intensify. More liquid low-foamers may enter the market if Lever Bros.' liquid "all" clicks big. Other prob-

FORECAST '60

CPI: Capital and Research Spending



abilities: more multiple packaging at the retail level, premium offers—and dramatic price reductions.

•

The CPI next year will spend a record $1.24 billion on research, and about $680 million of this will be in chemicals and allied products. In '59, comparable expenditures were $1.16 billion and $640 million, respectively.

In space studies, the big push will be to develop rocket boosters in the million-pound-thrust range. In this area, say experts, the U.S. lags far behind the Russians. It's also the key to long-range space exploration. Emphasis will be on the use of liquid and solid chemical propellents for the big rockets.

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March 5 is the deadline for proving food additives are "safe." Probable outcome: some products will go off the market, at least temporarily. But the Food & Drug Administration will be liberal in permitting use of items on which testing is proceeding satisfactorily.

•

On-line computer control of a chemical process may well debut in '60. But the computer gains will be evolutionary, rather than startling, results of technological breakthroughs. Several CPI control systems, carefully nursed through preoperation stages, are slated to begin paying off.

Particularly important to chemical makers: stepped-up development of control instruments that measure primary variables (chemical composition and physical properties of the product).

•

It all boils down to this: the outlook for 1960 is one of bustling activity and heightening competition for markets, processes and products in the U.S. and abroad. And with it, a cost-cutting awareness that could make the new year one of the best the industry has known.

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Badger is now sub-licensing the fluid bed catalytic process originally developed by The Sherwin-Williams Company for its own successful phthalic anhydride plant.

Numerous refinements have been contributed to the process by Badger. These include new purification techniques, better reactor design (including more efficient heat removal), improved condensing and recovery sections for effluent gases. The process has these advantages over conventional fixed bed methods: *Low capital and operating costs* — smaller, simpler equipment saves 20% or more on plant investment, cuts utility and operating labor costs up to 30%. *Better yield* — process converts 5-10% more of feed naphthalene to phthalic anhydride. *Flexibility* — throughput may be varied over a wide range; process is easy to control. *Highest product quality* — heat color stability is high due to fewer impurities. *Safety* — fluid bed reactor virtually eliminates possibility of explosion.

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Two major phthalic anhydride projects current at Badger

At Elizabeth, N. J., Badger is constructing a 30 million lb/yr phthalic anhydride plant for Reichhold Chemicals, Inc. When completed in late 1959, it will produce about 16% of U. S. production of phthalic anhydride made from naphthalene.

Another fluid bed plant, similar in design and capacity to RCI's, is being handled for ACNA (a subsidiary of the Montecatini group) in Milan, Italy. This plant is also scheduled to go on-stream in 1959.

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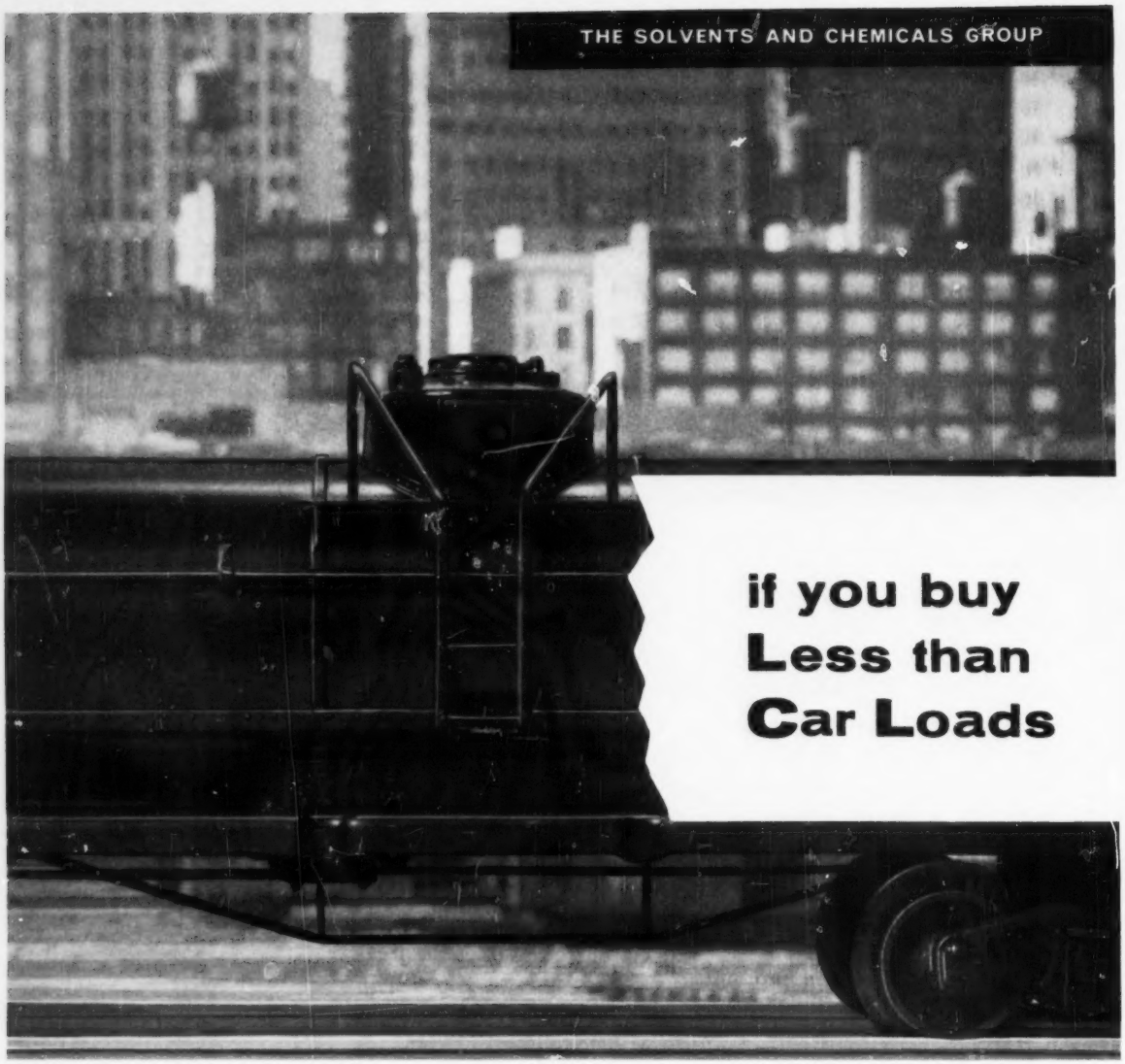

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COMMODITY OUTLOOK — 1960

Naphthalene	Pinch; new supply from petroleum?
Caustic/chlorine	Generally healthy; regional slacks.
Sulfuric acid	Plenty now; new capacity coming.
Ammonia	Glut disappears — except out West.
Phenol	West Coast heads for a surplus.
Formaldehyde	Another West Coast surplus item.
Styrene	Big boost from rubber demands.
Maleic/fumaric	Supplies snug now — flood by '61?

Supply Surfeit: Worst in West

In general, 1960 is shaping up as a bright year for chemical process industries (see p. 63); but there will, of course, be some problem areas. CHEMICAL WEEK's nationwide year-end commodity survey points up some of these, reveals particularly the significant oversupply situations developing in the fast-expanding West Coast CPI. Here's the national picture for '60, beginning with a rundown on the steel (coke oven) chemicals.

The painful shortage of naphthalene in '59—and the resulting tightness of phthalic anhydride supplies —will continue in '60. Although resumption of coke-oven operations will somewhat alleviate supply problems, neither chemical is likely to become plentiful in the near future.

One significant question bearing on the naphthalene shortage is whether or not petroleum firms will venture into naphthalene manufacture. Unable to compete with coke-oven naphthalene on a price basis, the petroleum industry will probably want firm purchase contracts on sales before trying it. Obviously the petroleum industry won't be able to solve the '60 shortage of naphthalene, but refiners' course of action regarding naphthalene should begin to emerge before the year is out.

Benzene — the other outstanding coke-oven chemical of special interest—also is expected to remain short next year. Tacit admission of this came through industry's posting of higher prices, starting Jan. 1, first by petroleum producers, then by coke-oven producers.

Chlorine Climbs, Caustic Creeps: Supply/demand for chlorine and caustic soda vary geographically. But over-all output of chlorine in '60 is expected to be at least 5% more than in '59, according to a recently completed Business & Defense Services Administration report.

In the East, calls for chlorine should be good—but demand for caustic, not so bright. Recent chlorine capacity expansions and reactivation of shut-down facilities indicate a bettering demand; on the other hand, there has been a relative slowness to reactivate caustic units because of lack of demand. (Exports of caustic and soda ash, in particular, will probably fall off in '60.)

On the West Coast, the chlorine-caustic situation varies markedly from California to Washington. Although chlorine overcapacity is reported in all areas, chlorine sales to paper producers in the Pacific Northwest are good—while caustic is decidedly in surplus. In the San Francisco Bay area, caustic business is good, but chlorine sales are showing little growth. Meanwhile, chlorine demand in southern California has picked up nicely—largely because of American Chemical's new ethyl chloride, ethylene dichloride, vinyl chloride plant. Caustic, however, is in oversupply in southern California, but is in better balance in some other parts of the Southwest.

Sulfuric Surplus: Sulfuric acid, too, must be considered geographically to see the reasons for the expected 4% increase of U.S. output in '60 (to 18 million tons).

In the heavy industrial areas around New York and New Jersey, a surplus of sulfuric is expected—largely because of Dixon Chemical's new facilities (*CW Market Newsletter, Nov. 28*).

But farther west, sulfuric supply will just meet expected demand, and there may be definite moves in '60 to up sulfuric capacity.

In the Far West, sulfuric acid capacity is described as ample by some, "in overcapacity" by others. In any case, Western sulfuric demand should be good and supplies plentiful, even if the steel strike is settled.

Ammonia—Short and Long: Except for the West Coast, most areas are no longer plagued by the big ammonia flood of '58. Demand has improved enough in the Midwest since then, in fact, that there is talk about more ammonia capacity boosts in the near future (*CW, Nov. 28, p. 60*).

Surplus ammonia capacity is still very much a problem in West Coast areas. Key observers there say capacity in '60 will be almost double demand because new capacity boosts have swelled further the pre-'59 overcapacity.*

Further adding to West Coast nitrogen supplies are shipments of ammonium sulfate from Canada, other parts of the U.S., Japan, Germany, Norway. In other areas of the coun-

* California Ammonia recently brought in a 45,000-tons/year plant. Valley Nitrogen producers started a 60,000-tons/year unit; moreover, Valley expects to put new capacity onstream in early '60, and Southwestern Agrochemical will come in with 22,000-tons/year in March.

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December 26, 1959

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MARKETS

try, however, there may be ammonium sulfate shortages next spring. Reason: low inventories because of the steel strike.

Phenol Abundance: Also in current oversupply in the West is phenol—but not nearly to the flood level of ammonia. Dow Chemical says it will build a 36-million-lbs./year unit in the Pacific Northwest,† insists the promise is not just a bluff to ward off other potential producers. This statement is an obvious reference to Reichhold's much-discussed and long-delayed 30-million-lbs./year phenol plant proposed for Tacoma, Wash.

In any case, if one or both plants are constructed, the Northwest will have more than ample phenol. In contrast, the forecast for phenol in the Gulf Coast region is "reasonable balance."

Formaldehyde Future: Formaldehyde is another attention-getter on the West Coast. Right now, Reichhold, Borden and Commercial Solvents produce the chemical in the West. Borden even talks about another 50-million-lbs./year plant near San Francisco, and Hercules plans to put a 50-million-lbs./year unit at Richmond, Calif., onstream in early '61.

If both Borden and Hercules boost capacity, a substantial oversupply will result; with it will come the distinct possibility of a price cut on Western formaldehyde.

Rubber Bumps Styrene: Next year will be the "best year the rubber industry has had," say rubber experts. There's an appended warning, however, that '60 will usher in a competitive decade that will make past selling drives look amateurish.

Synthetic rubber demand will, in '60, "at least equal—perhaps better—the consumption record of natural rubber" for the first time.

The bright rubber outlook is considered one important factor behind current boosts of styrene monomer capacity (Monsanto talks about a big 200-million-lbs./year styrene boost; and a West Coast producer reportedly is upping its styrene capacity).

Although styrene monomer is obviously heading for a sizable increase, the specter of a troublesome surplus has not yet arisen. On the contrary, there is now speculation that the Jan. 1 benzene price increase

† Major phenol producers on the West Coast: Oronite, 50 million lbs./year; Monsanto, 30 million; Productol, 5 million.

may foster price hikes on styrene and phenol.

Maleic and fumaric acid are still among those materials in tight supply/demand situations. But there's a good chance that the maleic-fumaric picture may change significantly before the end of '60—much depends on how soon producers will put in several new and expanded production units.

Many other chemicals are, of course, heading for more definite overcapacity. Among them: acrylonitrile, ethylene oxide, methanol, vinyl chloride, butadiene, plus others in specific industrial areas. In the Gulf Coast area, for example, overcapacity is expected for ethylene oxide, propylene oxide, sulfuric acid, muriatic acid, glycerine. In "slight" oversupply: ammonia and methanol.

MARKETPLACE

High-purity indium ingot is now available from High Purity Metals Inc. (Hackensack, N.J.) for use in manufacture of germanium transistors, diodes, rectifiers, etc. The ingots come in two sizes: 10 and 100 troy ounces; prices vary with quantity and purity.

•

n-Butyronitrile—a specialty solvent and chemical intermediate—is available in commercial quantities from Eastman Chemical at $1/lb. in drums.

•

Color prices are increased—effective Jan. 4—by American Cyanamid. New tabs include: molybdate-chrome oranges (all shades), 49¢/lb.; light-chrome greens, 43¢; medium-chrome greens, 44¢; dark-chrome greens, 45¢/lb.

•

Vinyl resin capacity is being increased more than 30%, to 65 million lbs./year, at Naugatuck Chemical's Painesville, O., vinyl (Marvinol) plant. Expansion is scheduled for completion next July.

Emphasis is placed on increasing production of plastisol-grade vinyl resins.

•

Titanium dioxide is not being dumped on the U.S. market by Japan, according to the U.S. Treasury Dept.; investigation showed that imports are not sold here at less than fair value.

The Treasury Dept. will also inquire whether Austrian aluminum for florist foil is being dumped here.

Tracers

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SELLING OPPORTUNITY AVAILABLE

Quality Organic Peroxide Line available in some areas to distributors calling on the polyester resin trade. RW-3130, Chemical Week.

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BUSINESS OPPORTUNITY

Wanted Organic Chemical Plant. Engaged in the manufacture of dyestuff and/or intermediates. For purchase, affiliation or other mutually satisfactory arrangement. Old established, multi-plant manufacturer of organic chemicals desires to vertically integrate its operations. Personnel will be retained as far as possible. All replies kept in strict confidence. BO-3203, Chemical Week.

Well established interesting and challenging Industrial Oil and Specialty Mfg. business in operation in Mass. to be sold due to retirement. Included are storage tanks, buildings and equipment. P. O. Box 364, Sharon, Mass.

CONTRACT WORK AVAILABLE

Custom production wanted or to rent chemical facilities—500-1000 gallon S/S or G/L reactor. CWA-3300, Chemical Week.

CONTRACT WORK WANTED

Small Pigment factory near Chicago wants contract work. CWW-3254, Chemical Week.

FOR SALE

$3,000,000 Liquidation-Chemical Plant at Orange, Texas. Type 316 Stainless Steel Tanks, Kettles, Heat Exchangers, Columns, Stills, Crystallizers, Centrifugals, Pumps, Valves, etc. Wonderful Values. Send for list. Perry Equipment Corp., 1415 N. 6th St., Philadelphia 22, Pa.

A.T.&M. Suspended Centrifugal 40" dia. x 30" deep type 304 st. st. baskets 40 or 30 H.P. motor bottom dischg. Perry, 1415 N. 6th St., Phila., Pa.

17,650 gal T 316 st. st. horiz. tank 9' dia. x 36' long ¼" shell ⅜" dished heads. Perry Equipment Corp., 1415 N. Sixth St., Philadelphia 22, Pa.

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MISCELLANEOUS

To Employers Who Advertise for Men: The letters you receive in answer to your advertisements are submitted by each of the applicants with the hope of securing the position offered. When there are many applicants it frequently happens that the only letters acknowledged are those of promising candidates. (Others do not receive the slightest indication that their letters have even been received, much less given any consideration.) These men often become discouraged, will not respond to future advertisements and sometimes even question if they are bona fide. We can guarantee that Every Advertisement Printed Is Duly Authorized. Now won't you help keep our readers interested in this advertising by acknowledging every application received, even if you only return the letters of unsuccessful applicants to them marked say, "Position filled, thank you." If you don't care to reveal your identity, mail them in plain envelopes. We suggest this in a spirit of helpful co-operation between employers and the men replying to Positions Vacant advertisements. Classified Advertising Division, McGraw-Hill Publishing Company. "Put Yourself in the Place of the Other Fellow."

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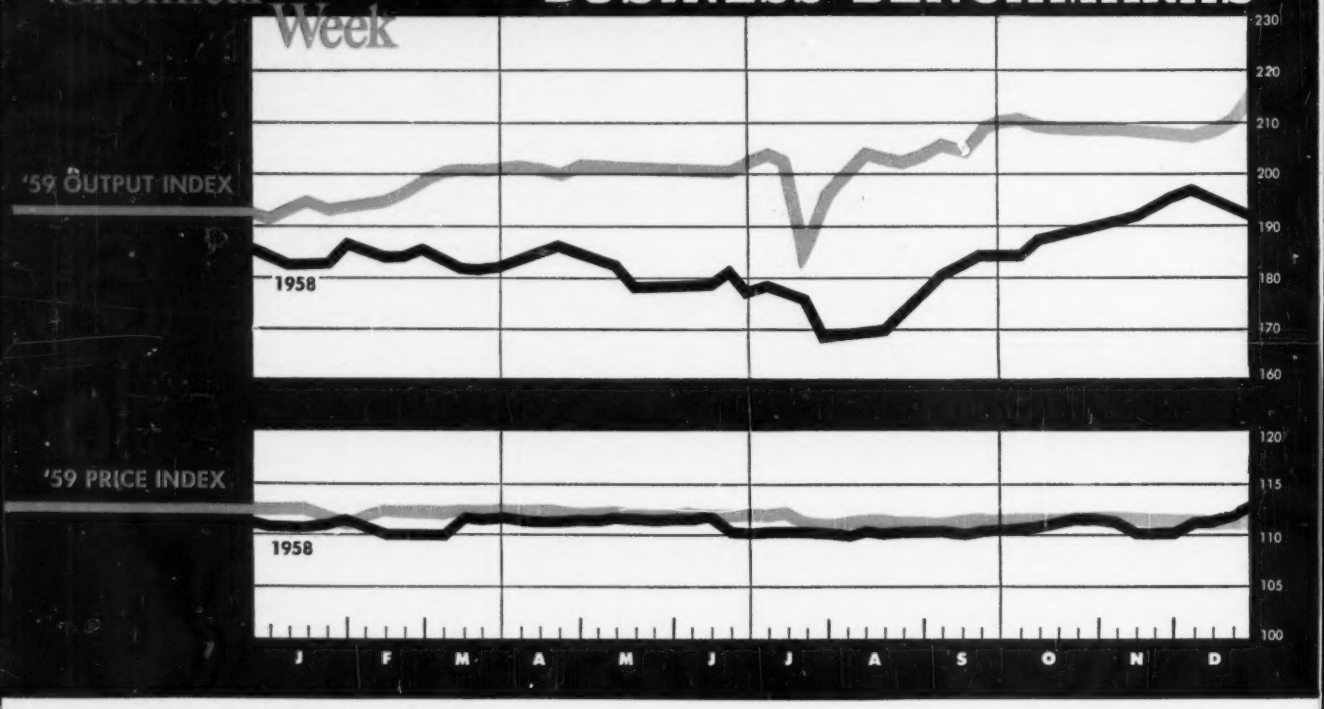
Chemical Week

BUSINESS BENCHMARKS

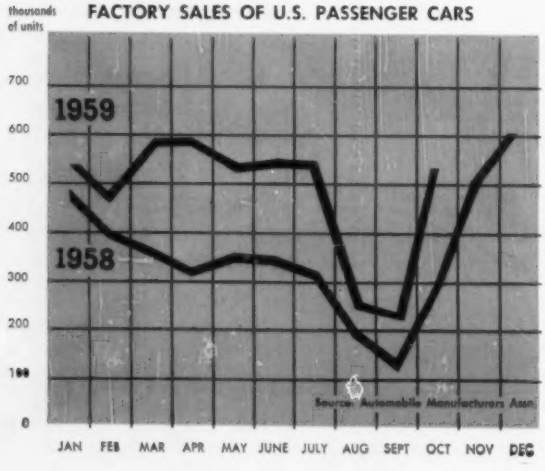


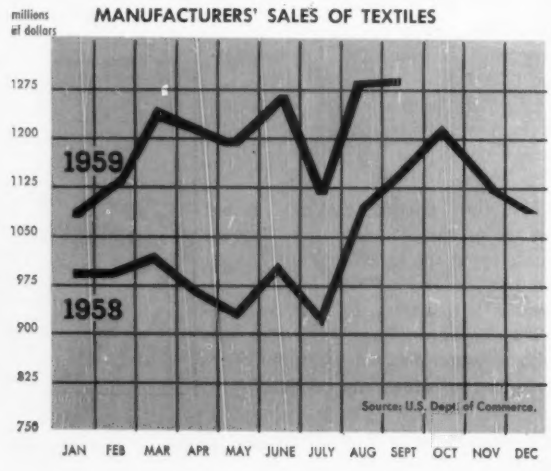
DECEMBER 26, 1959

WEEKLY BUSINESS INDICATORS	*Latest Week*	*Preceding Week*	*Year Ago*
Chemical Week output index (1947-1949=100)	215.0	213.0	192.0
Chemical Week wholesale price index (1947=100)	110.8	110.8	111.8
Stock price index (12 firms, Standard & Poor's)	61.20	60.61	48.00
Steel ingot output (thousand tons)	2,729	2,732	2,011
Electric power (million kilowatt-hours)	14,167	13,907	13,450
Crude oil and condensate (daily av., thousand bbls.)	7,123	7,027	7,097

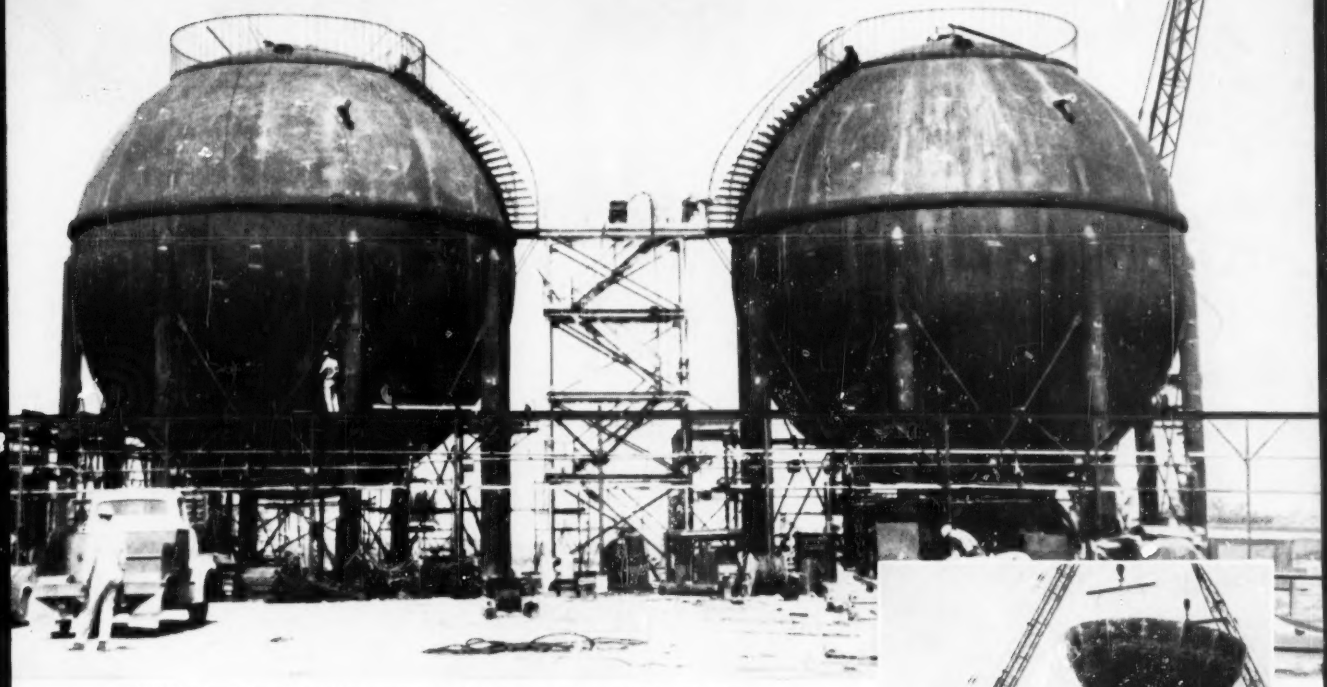
TRADE INDICATORS (million dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	*Preceding Month*	*Year Ago*	*Latest Month*	*Preceding Month*	*Year Ago*
All manufacturing	29,350	29,818	27,158	51,419	51,892	49,337
Chemicals and allied products	2,208	2,273	2,077	4,008	3,970	3,760
Petroleum and coal products	3,138	3,301	2,903	3,261	3,267	3,276
Paper and allied products	1,005	1,029	947	1,480	1,471	1,423
Textile products	1,201	1,222	1,042	2,572	2,516	2,490

CHEMICAL CUSTOMERS CLOSE-UP





HOW TO STORE LIQUIDS AT -320°F.



CB&I Hortonspheres built for cryogenic storage are spheres within spheres.

CB&I-built HORTONSPHERES® do it for Linde at Pittsburg, California

CB&I engineered, fabricated and erected these special Hortonspheres for Linde's new plant at Pittsburg, California, using Linde-approved designs. One is used to store liquid oxygen at —297° F. The other will store liquid nitrogen at —320° F.

Their construction is unusual . . . each structure is actually a sphere within a sphere. A specially designed rod support system cradles the 38′9″ diam. aluminum inner sphere within the 46′9″ diam. carbon steel outer shell. Heat transfer to the inner sphere is minimized by powdered insulation placed between the inner and outer shell.

Cryogenic storage calls for vessels of special design . . . and the know-how to build them. Linde Company used this know-how from CB&I's seven decades of craftsmanship in steel. So can your company. Write for further details.

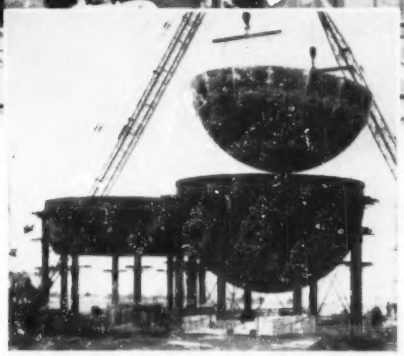
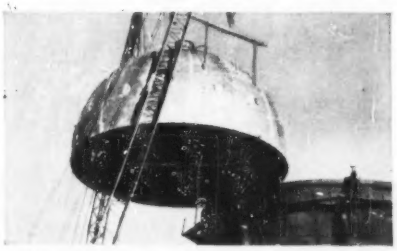


Photo taken during erection shows cranes setting section of aluminum inner sphere.



Above and below: Experienced CB&I erection crews make tough jobs look easy.

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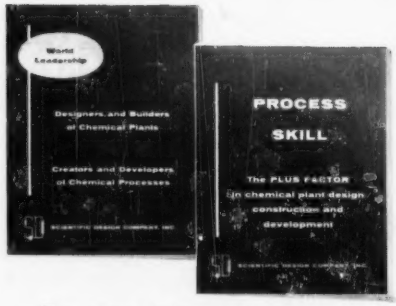
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